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GLOBAL FEES FOR SURGERY

Final Report

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1.0 INTRODUCTION

1.1 Statement of the Problem

Most major surgical procedures have traditionally been reimbursed through a global fee that covers the operation itself and some predefined amount of pre and postoperative care. Medicare carriers have had considerable discretion in determining the types of services to be included and the duration of the time period covered. In this regard, payment rules for surgery are considerably different from those for other physician services.

Up until now, carrier discretion in determining global fee definitions has not been a problem, as the fees themselves were also determined by individual carriers (using the CPR methodology). With a national fee schedule, however, these definitions must be consistent across the country for two reasons. First, the resource-based relative values for surgical procedures are to be calculated using a standard mix of pre and postoperative services. Thus, RBRVS-based payments will be based on the assumption that a fixed number of follow-up visits, etc. are being provided by the surgeon. Second, in the absence of a consistent set of global fee definitions, surgeons may begin to extra-bill for related services in order to offset any revenue losses due to the fee schedule.

Both HCFA and PPRC are in the process of developing a surgical global fee policy. Little is known, however, about current billing patterns and the extent to which existing carrier practices may deviate from any proposed national global fee policy. This purpose of this project was to document the extent to which surgeons do, or do not, bill for pre and postoperative care. We defined pre and postoperative care broadly to include not only visits and consultations, but also diagnostic tests, incidental surgeries, and the like. In addition, for selected carriers, this project compared stated carrier global fee policies with actual bills for those carriers.

1.2 Executive Summary

This study used the 1987 linked BMAD beneficiary file. This file includes all Part B and Part A hospital claims for a 5 percent sample of Medicare beneficiaries. While we only analyze Part B claims, the hospital bills were necessary in order to reliably distinguish between physician services provided during the index admission (i.e. the admission during which the surgery took place) from those provided during readmissions.

Ten families of high-volume Medicare surgical procedures were selected for in-depth study. They were chosen to represent a range of physician specialties, as follows:

- general surgery: cholecystectomy, partial colectomy, carotid thromboendarterectomy;
- orthopedic surgery: total hip replacement, total knee replacement;
- ophthalmology: lens (cataract) procedures, laser eye surgery;
- cardiovascular surgery: coronary artery bypass graft (CABG) surgery, permanent pacemaker insertion; and
- urology: transurethral resection of the prostate (TURP).

Fixed global fee periods were defined for each procedure: seven days preoperative and 90 days postoperative (or readmission, whichever came first).

Table 1-1 summarizes the number of visits and consultations provided during these pre and postoperative periods for each procedure group. These numbers represent averages, calculated across all patients and all carriers (regardless of the carrier's global fee policy). They are useful in pointing out differences by procedure or by specialty. There are few preoperative consultation bills submitted for the orthopedic and ophthalmologic procedures shown here. One explanation is that these are relatively discretionary procedures which are scheduled well in advance; the preoperative consultation may have been provided weeks before the operation.

Preoperative outpatient visits are even less common, possibly because many carriers report that they do include these in the global fee. Preoperative hospital visits, on the other hand, are billed relatively frequently for the three general surgical procedures, pacemaker insertion, and

TABLE 1-1

MEAN NUMBER OF PRE AND POSTOPERATIVE VISITS BY PROCEDURE GROUP

	PREOPERATIVE			POSTOPERATIVE	
	Consultations	Outpatient Visits	Hospital Visits	Hospital Visits	Outpatient Visits
Cholecystectomy	.230	.122	.276	.235	.198
Partial Colectomy	.207	.102	.326	.280	.178
Carotid Thromboendarterectomy	.224	.098	.374	.216	.118
Total Knee Replacement	.024	.111	.148	.198	.235
Total Hip Replacement	.068	.101	.185	.219	.178
Lens Procedures	.012	.074	.006	.024	.164
Laser Eye Surgery	.005	.089	.001	.004	.033
Coronary Artery Bypass Graft	.252	.008	.146	.243	.055
Permanent Pacemaker Insertion	.265	.043	.491	.492	.314
Transurethral Resection of the Prostate	.160	.222	.304	.146	.313

Source: BMAD linked beneficiary file, 1987.

TURP. (Some carriers do not reimburse pacemaker insertions on a global fee basis, which may explain higher than average bills for this procedure.)

The number of postoperative hospital visits is surprisingly high for all of the inpatient procedures,* given that virtually all carriers apply the global fee concept to postoperative care. More than two hospital visit bills are submitted for every 10 patients undergoing cholecystectomy, partial colectomy, thromboendarterectomy, joint replacements, CABG surgery, and pacemaker insertion. The number of outpatient visits is somewhat harder to evaluate, as many carriers employ shorter global fee periods than the 90 days used in our study.

There is substantial carrier variation in these means, however, even across carriers who ostensibly employ the same global fee definition. Table 1-2 compares the average number of hospital visits following each of our inpatient procedures for selected carriers.**

Although the global fee definitions vary across these carriers, the postoperative time period is generally always at least as long as the average Medicare hospital stay. It is thus likely that most of these visit bills were submitted before the global fee period ended.

Consider cholecystectomy, for example. Seven of the eleven carriers shown employ a 45-day postoperative follow-up; thus, all hospital visit bills clearly fall within this window. (The average Medicare length of stay for cholecystectomy is about 11 days.) Despite this, California Blue Shield pays almost three bills for every 10 cholecystectomy patients, while Travelers of Virginia reimburses more than six hospital visits for every 10 patients. Of the carriers with shorter global fee periods, Massachusetts uses a two-week period, while Empire of New York and Texas use four weeks. Nevertheless, these definitions should also encompass the overwhelming majority of cholecystectomy patients. Finally, HCSC of Illinois uses an extremely limited

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*Lens procedures and laser eye surgery are performed almost exclusively outside the hospital.

**BPO surveyed these particular carriers to ascertain, among other things, the duration of the postoperative global fee period.

TABLE 1-2

MEAN NUMBER OF HOSPITAL VISITS FOR INPATIENT PROCEDURES BY CARRIER[a]

	CHOLECYS-TECTOMY	PARTIAL COLECTOMY	CAROTID THROMBOEN-DARTERECTOMY	TOTAL KNEE REPLACEMENT	TOTAL HIP REPLACEMENT	CABG SURGERY	PACEMAKER INSERTION	TURP
California Blue Shield	.287	.064	.007	.033	.021	.001	.711	.055
Florida Blue Shield	.007	.008	.000	.000	.004	.003	.027[b]	.016
HCSC (Illinois)	.354	.421	----	.395	.185	.447	.323	.265
Massachusetts Blue Shield	.328	.130	----	----	.922	----	----	.257
Michigan Blue Shield	.249	.259	.049	.320	.027	.371	.316	.048
Empire (New York)	.139	.069	----	----	.085	.000	----	.038
North Dakota Blue Shield	----	----	----	----	----	----	----	.375
Pennsylvania Blue Shield	.198	.099	.000	.308	.389	.389	.127	.038
Texas Blue Shield	.067	.119	.103	.033	.034	.134	1.145[b]	.021
Aetna - Arizona	----	----	----	----	----	----	----	.365
Occidental - California	.158	.214	.058	.090	.018	.089	.341	.094
Travelers - Virginia	.628	----	----	----	----	----	----	.262
Nationwide - Ohio	.170	.413	.166	.187	.010	.030	.506	.290

[a] Data are omitted for carriers with fewer than 100 cases for a given procedure group.

[b] These carriers do not reimburse pacemaker insertion on a global fee basis.

Source: BMAD beneficiary linked file, 1987.

global fee definition (only seven days); some of the visits shown for this carrier may be legitimately outside the time window.

One possible reason for the variation in hospital visit billings across carriers with similar global fee definitions is practice pattern differences. Pacemaker insertion provides an example of this practice pattern variation. Both Florida Blue Shield and Texas Blue Shield do not reimburse pacemaker insertions on a global fee basis. However, Texas reimburses for nearly three times as many postoperative hospital visits as Florida, over one visit per patient as compared to just three bills for every ten pacemaker patients in Florida. This may mean that surgeons in Florida are more likely to delegate follow-up care to other physicians. (These other physicians are allowed to bill Medicare independently for their follow-up visits.)

Under a national fee schedule there will be incentives for surgeons to increase their delegation of postoperative visits to other physicians. For states like Florida there may be little change. However, Texas surgeons may change their behavior once postoperative hospital visits are included in their global fee and no longer reimbursed separately. Physicians other than the primary surgeon may begin to provide these visits.

While visits and consultations are among the services most commonly included in the global fee, we were interested in documenting the extent to which surgeons billed for other related services, such as diagnostic tests prior to surgery or other operations performed at the same OR sitting as the study procedure. As a rule, we observed relatively few bills for such services. Most preoperative diagnostic tests were performed by physicians other than the surgeon. Exceptions included lower GI endoscopy prior to partial colectomy (15% of cases), ophthalmic biometry prior to lens procedures (21%), and cystourethroscopy before TURP (19% of cases).* postoperative services (other than visits) were even rarer; a notable exception, however, were x-rays performed by orthopedic surgeons after joint replacement (over 50% of cases).

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*These percentages are based on services provided on the same day as the index surgery as well as the seven days preceding.

Surgeons billed for other major surgical procedures performed on the same day as the index surgery in a relatively small number of cases. General surgeons also removed gallbladders in 4 percent of their partial colectomy cases, for example, and thoracic surgeons replaced aortic valves in 7 percent of their CABG cases.

In a surprisingly high proportion of cases, patients were readmitted before the 90-day follow-up period expired: between 13 and 24 percent depending on the procedure (See Table 1-3). The majority of these readmissions appear to be unrelated to the surgery, however, at least to the extent that they fall into a different MDC category. Thus, only 3.3 percent of knee replacement patients were readmitted with musculoskeletal problems, representing roughly one-quarter (3.3/12.9) of all knee replacement readmissions. When the readmission is within the same MDC, it is as likely to be for medical management as it is for repeat surgery.

The primary surgeons were involved in one-half or fewer of these readmissions, at least as indicated by their billings. In some cases, they were re-performing the study procedure; about one-quarter of the thromboendarterectomy readmissions involved a second thromboendarterectomy by the same surgeon. In other cases, the surgeon was providing diagnostic services that may or may not have been related to the original surgery, e.g. cystourethroscopy on former TURP patients. Not surprisingly, hospital visits and consultations constituted a relatively large proportion of the services provided by surgeons during readmission. It is possible that some of these visits or consultations could be related to complications of the original surgical procedure, or they could involve a new medical problem. In either case, it is important to keep in mind that a number of these readmissions may have occurred after the carrier's global fee period had elapsed.

All discussions of global fee policies have focussed on the primary surgeon. Physicians other than the surgeon may also provide related services, such as diagnostic tests, visits and consultations, and surgical assistance (either with the study procedure or other surgeries). We found extensive billings by other physicians on the same day as the surgery, as well as during

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TABLE 1-3

READMISSION RATES FOR INPATIENT STUDY PROCEDURES[a]

Index Surgeries	PERCENTAGE READMITTED	READMISSIONS IN THE SAME MDC AS THE INDEX SURGERY: Percent Surgical	READMISSIONS IN THE SAME MDC AS THE INDEX SURGERY: Percent Medical	PERCENTAGE WITH CHARGES FROM PRIMARY SURGEON DURING READMISSION
Cholecystectomy	13.2%	0.7%	1.6%	3.9%
Partial Colectomy	18.3	4.1	3.5	7.9
Carotid Thromboendarterectomy	23.7	5.7	2.5	10.0
Total Knee Replacement	12.9	2.3	1.0	8.4
Total Hip Replacement	14.5	2.0	2.1	7.3
Coronary Artery Bypass Graft (CABG) Surgery	22.5	3.4	7.5	2.6
Permanent Pacemaker Insertion	22.2	3.3	7.9	7.3
Transurethral Resection of the Prostate (TURP)	14.5	0.7	1.7	3.9

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[a] All percentages are based on the total sample, not the subsample of readmitted cases.

Source: BMAD linked beneficiary file, 1987.

the preoperative and postoperative periods. Since Medicare patients are apt to have multiple complicating conditions, many of these bills may reflect care unrelated to the surgical procedure itself. In some instances, however, it is possible that the primary surgeon has delegated postoperative care to a medical specialist. Because of the potential for increased delegation of such global fee tasks under a fee schedule, we recommend that more research be conducted on the role(s) played by other physicians, especially during the hospitalization itself.

1.3 Overview of Report

Chapter 2 describes the data source for this study, selection of surgical procedures, and file construction. Descriptive tables are presented in Chapter 3 with detailed information on the services billed in association with each of the study procedures. This information is shown for both the primary surgeon and for all other physicians combined; it is displayed at three different points in time: preoperative, the same day as surgery, and postoperative. Chapter 3 concludes with a comparison of readmission rates. Differences in billing for pre and postoperative services are compared by carrier in Chapter 4. Taking advantage of a recent BPO survey, we compare stated carrier global fee policy with actual paid bills.

2.0 DATA AND METHODS

The database used for our analysis of the billed services for ten high volume Medicare surgical procedures is the 1987 BMAD linked beneficiary file. The file is based on a five percent sample of Medicare beneficiaries, including all of their Part B claims.* For the most part, we limit our analysis to bills for physicians' services.

This database includes the BMAD beneficiary file plus the Medpar (Part A) records for those beneficiaries. The Part A claims link the Part B records with a specific admission and provide information on the patient's admission and discharge dates, DRG and complicating conditions. The Part A data are necessary in order to reliably identify the inpatient physician service that took place during the index admission (as distinct from readmissions). These data also allow us to examine details of readmissions.

2.1 Creation of Ten Index Procedure Files

The ten Medicare surgeries chosen for this study are high volume Medicare procedures that cover a range of specialties:

- General Surgery

  Choleystectomy
  Partial Colectomy
  Carotid Thromboendarterectomy

- Orthopedic Surgery

  Total Knee Replacement
  Total Hip Replacement

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*A 100 percent sample is drawn for beneficiaries who are eligible by virtue of end-stage renal disease (ESRD). In order to obtain a nationally representative sample of all Medicare beneficiaries, we selected a five percent sample of ESRD patients. This was done using the same selection criteria used by the carriers for other beneficiaries (i.e. based on their social security number).

- **Ophthalmological Surgery**

  Lens Procedures
  Laser Eye Surgery

- **Cardiovascular Surgery**

  Coronary Artery Bypass Graft
  Permanent Pacemaker Insertion

- **Urologic Surgery**

  Transurethral Resection of the Prostate.

Almost all of these operations actually represent a family of related procedure codes. Table 2-1 displays the CPT-4 codes that are included in each surgery, as well as the final sample sizes.

A separate file was created for each of the ten chosen index surgeries in the following way. First, a beneficiary that had the index surgery performed is selected for inclusion in the sample and all the 1987 Part B bills, and the Medpar claims for that person is pulled off for that file. That is, information was retained on all billings for that beneficiary for the entire year. This was done separately for each index surgery so that a Medicare beneficiary having both a partial colectomy and hip replacement surgery in 1987 would be present in both of the relevant files.

Second, episodes of care were defined around each index surgery as seven days prior to and 90 days following surgery, up until a readmission. (Readmissions are not included in the episode because they often are for a different illness. We examine readmission rates directly at the end of Chapter 3). The actual pre and postoperative period encompassed by global surgical fees varies by carrier and by surgical procedure. At the start of our work on this project we did not have carrier-specific information regarding the global fee period. We chose a 90 day postoperative period because that is the time period recommended by both HCFA and PPRC. Seven days was chosen as the preoperative period because that is the amount of time that HCFA is considering for the global fee. PPRC recommends a one day period, therefore we will present the visit and consult billings for the one day prior to surgery as well as for the entire seven day period.

For each beneficiary the procedure that occurs first chronologically is the index procedure and any study procedure occurring after 90 days is

TABLE 2-1

CPT-4 CODE DEFINITIONS AND SAMPLE SIZES FOR STUDY PROCEDURES

PROCEDURE GROUP	CPT-4 CODES	SAMPLE SIZE
Cholecystectomy	47600-47620	7,256
Partial Colectomy	44140-44147	5,118
Carotid Thromboendarterectomy	35301-35381	2,620
Total Knee Replacement	27446-27447	2,894
Total Hip Replacement	27130-27138	3,553
Lens Procedures	66983-66985	41,619
Laser Eye Surgery	66821	11,238
Coronary Artery Bypass Graft (CABG) Surgery	33510-33516	4,934
Permanent Pacemaker Insertion	33206-33208	3,486
Transurethral Resection of the Prostate (TURP) Surgery	52601	12,261

Source: BMAD beneficiary linked file, 1987.

considered a second episode. For example, if a beneficiary has knee replacement surgery on March 1st, and then again on March 10th, that second operation would just be included in the information retained for the post-operative period. However, if that second operation occurred in July instead, that operation would be treated as a new episode.

2.2 Elimination of Duplicate Claims

For each of our ten files it was necessary to solve the problem of having multiple bills for the same procedure, on the same date of service. When two claims were identical in every way we simply dropped one of them. In all other cases, it was necessary to examine by hand the duplicate claims in our ten files. Rules were developed specifically for each file but there were several general steps taken to eliminate duplicates.

First, if the two claims had two different physician provider numbers, then the bill with the highest allowed charge was the index procedure bill and the other bill was either a co-surgeon or assistant surgeon claim. Assistant surgeons may identify themselves on claims through procedure code modifiers from one of three coding systems (CPT-4, or national or carrier-level HCPCS) or through Medicare type-of-service codes. However, assistant surgeon claims often carry neither the appropriate modifiers nor the correct type-of service code, and can be identified only indirectly through lower submitted and allowed charges.

The claim was considered a co-surgeon bill if the average allowed charge was one half or more of the primary surgeon's fee. For surgeries where bilateral procedures were possible (i.e., total knee replacement), we were unable to distinguish between a single procedure with two physician claims (co-surgeons) and inadequately modified bilateral procedures. When the second claim was for less than one half of the allowed charge for the index surgery, it was considered to be an assistant surgeon bill and re-classified accordingly.

Second, if the two claims had the same provider number, again the bill with the highest allowed charge was made the index procedure bill. The two claims with the same date of service and provider ID may represent two services by the same physician, or claims from a primary and an assistant surgeon within the same medical group. If both claims have the same processing indicator, then the same rules were applied as explained above for multiple claims with different provider numbers. When the process indicators are different, this indicates that one of the claims has been reprocessed, and is an adjustment to the first claim. In that situation, the two claims are converted into one and the allowed charges are summed.

As just mentioned, during the data cleaning and file construction process, distinctions were made between co-surgeon and assistant surgeon bills. However, for presentation purposes in the following chapter, co-surgeon and assistant surgeon bills have been combined. The assistant surgery bills presented are the total amount billed for one or more additional surgeons assisting with the index surgery.

2.3 File Aggregation

The final step involved in constructing the files was to aggregate the claims so that the episode of care for the index procedure becomes the unit of analysis. It was not possible to preserve information for all the Part B claims during the episode of care period. The global fee period was divided into three times; seven days prior to surgery, the day of surgery, and up to 90 days after surgery. The frequency of CPT-4 codes was examined for each of these three periods. It was decided that details on all visits and consultations for each of the three time periods would be included on the aggregate file, regardless of their frequency. For the preoperative period, we also kept information on the visits and consultations occurring just one day prior to surgery. All other services were chosen for separate inclusion in the aggregate file if they represented at least one percent of the index procedure patients. Information on the remaining (low frequency) services was retained by type of service.

The allowed charges for the primary surgeon (surgeon responsible for the index procedure) and the allowed charges for any physician other than the primary surgeon were summed separately for every variable created for the aggregate file. Billings for services that occurred infrequently were summed by type of service category, separately for the primary surgeon and any other physician. For example, for total knee replacement surgery, knee x- rays were the only radiological services for which we kept separate information. All other charges for x-rays fell into the residual category for the radiology type of service. A different set of high volume services were chosen for each of three time periods. Summary information on readmissions, if any, were also included on the aggregate files.

One the aggregate files were created, we trimmed for outliers. Rather than identifying outliers by using a predetermined algorithm or a fixed percentage for all ten index procedures, we took a more conservative approach. The distribution of allowed charges was examined separately for each of the index procedures. The extreme high and low outliers were eliminated. These high or low outliers could represent typographical errors in documentation of the procedure code. Our approach resulted in the deletion of less than one percent of the observations per procedure.

3.0 BILLED SERVICES FOR TEN FREQUENTLY PERFORMED MEDICARE SURGICAL PROCEDURES

This chapter provides detailed information on the billings for the ten study procedures. The surgeries have been divided into five groups: general surgical procedures; orthopedic surgical procedures; ophthalmologic surgery; cardiovascular procedures; and urological surgery. For each of the ten surgeries, the episode of care we examine is from seven days prior to surgery to 90 days after surgery. Information is shown for both the primary surgeon and for all other physicians combined. Readmission information for the ten procedures is summarized at the end of this chapter in Section 3.6.

3.1 General Surgical Procedures: Cholecystectomy, Partial Colectomy, and Carotid Thromboendarterectomy

Cholecystectomy: Tables 3-1, 3-2 and 3-3 summarize the billings for those patients who had cholecystectomy surgery. The first table, 3-1, presents those bills submitted for services performed seven days prior to the cholecystectomy surgery. These services have been grouped according to the type of service they represent, i.e., medical care, consultations, surgery, radiology, laboratory, and tests. Visits and consultations are also shown for the day before surgery. Information is displayed separately for the primary surgeon responsible for performing the cholecystectomy surgery and for any other physicians that may be submitting bills for this patient during this time period.

For each service performed three figures are presented: the percentage of patients receiving this service; the average allowed charge per patient receiving this service (per user); and the average allowed charge per cholecystectomy patient (averaged across all cholecystectomy patients, regardless of use). The percentage of cholecystectomy patients receiving the service when multiplied by the average allowed charge per user equals the average allowed charge per patient.

Looking first across the medical care services at the top of the table, 10 percent of all cholecystectomy patients had their primary surgeon submit a

TABLE 3-1

PREOPERATIVE BILLINGS FOR CHOLECYSTECTOMY (n=7,256)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office Visits	10.2%	$29.34	$2.98	20.3%	$28.49	$5.77
ER Visits	0.7	37.25	.27	19.6	45.65	8.95
Hospital Visits	12.4	83.18	10.35	43.2	197.80	85.40
Critical care visits	0.2	131.28	.29	4.2	184.58	7.78
Other	0.6	31.15	.18	5.0	81.92	4.09
Consultations	21.4	77.16	16.54	23.1	110.05	25.45
Surgery						
Upper G.I. endoscopy	1.0	308.59	2.95	3.5	322.82	11.26
Lower G.I. endoscopy	1.1	255.04	2.92	2.2	335.38	7.53
Endoscopic retrograde cholangiopancreatography	0.1	509.27	.70	2.1	530.80	11.33
Injection procedures	1.4	80.62	1.16	4.9	38.17	1.86
Other	1.1	522.93	5.69	4.1	461.05	19.13
Radiology						
Chest X-rays	1.3	26.80	.34	61.2	18.35	11.24
Abdominal X-rays	0.5	29.13	.14	26.9	21.64	5.82
Abdominal CAT scans	0.1	206.54	.14	9.1	121.45	11.10
Upper G.I. series	0.2	66.32	.10	9.9	40.06	3.97
Barium enema	0.1	56.38	.08	5.0	36.30	1.83
Cholecystography	0.2	47.13	.07	3.7	26.31	.97
Cholangiography	0.0	0.00	.00	2.7	27.57	.74
Abdominal echography	0.5	70.48	.35	31.9	54.15	17.28
Retroperitoneal echography	0.1	46.24	.05	3.0	51.79	1.55
Hepatobiliary ductal system imaging	0.04	62.75	.03	6.7	61.85	4.16
Liver function study	0.1	42.62	.03	2.9	50.58	1.48
Other	0.3	105.89	.27	15.0	96.89	14.54
Laboratory	1.6	31.56	.50	14.6	45.33	6.63
Other Tests						
ECGs	2.3	24.29	.55	57.0	18.55	10.58
Echocardiography	0.02	181.80	.05	1.6	116.04	2.10
Other	0.3	69.56	.18	6.7	79.36	5.33
All Other Charges	0.3	115.58	.30	6.4	239.11	15.39
TOTAL CHARGES			**47.21**			**303.26**
ONE DAY PREOPERATIVE						
Office Visits	1.1	28.62	.32	2.9	26.33	.76
ER visits	0.6	41.68	.10	4.7	46.42	2.18
Hospital visits	7.2	51.81	3.73	22.4	90.45	20.23
Critical care visits	0.1	95.18	.12	1.7	137.62	2.37
Consultations	8.6	73.97	6.33	9.9	91.40	9.06
TOTAL MEDICAL CARE			**10.60**			**34.60**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-2

CHOLECYSTECOMY BILLINGS FOR THE SAME DAY AS SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary Surgeon	100.0%	$933.22	$933.22			
Co-surgeon or assistant surgeon				43.8%	$198.97	$87.20
Anesthesia				69.2	272.52	188.69
Medical Care						
Office visits	0.3%	$25.11	$.07	0.8%	$26.73	$.21
Hospital visits	3.4	63.43	2.13	22.2	107.47	23.90
Critical care visits	0.4	117.00	.50	4.4	131.78	5.83
Other	0.3	46.65	.15	3.4	68.86	2.33
Consultations	4.4	74.21	3.23	9.0	93.28	8.43
Surgery						
Upper G.I. endoscopy	0.5	219.89	1.00	0.5	310.31	1.50
Swan Ganz	0.3	218.75	.60	1.5	290.94	4.29
Injection procedures	2.0	113.11	2.28	4.0	104.54	4.22
Intestinal incisions	1.5	431.24	6.54	0.1	137.96	.13
Colectomies	3.4	1,286.11	43.43	0.1	517.68	.71
Liver biopsy and resection	2.7	242.31	6.51	0.2	189.80	.31
Other	15.3	706.75	108.31	4.0	467.87	18.76
Radiology						
Chest X-rays	0.3	17.65	.06	18.8	15.60	2.93
Abdominal X-rays	0.1	21.78	.03	7.4	16.81	1.24
Cholangiography and/or pancreatography	1.3	30.59	.38	52.4	26.21	13.73
Abdominal echography	0.1	60.54	.06	4.6	50.07	2.32
Other	0.2	52.06	.09	6.9	62.53	4.32
Laboratory						
Surgical pathology	0.7	50.86	.37	50.9	62.48	31.78
Other	0.2	46.53	.07	2.9	25.64	.75
Other Tests						
Electrocardiogram	0.5	19.22	.09	16.3	14.79	2.41
Other	0.1	48.49	.06	2.2	87.42	1.93
All Other Charges	2.1	242.45	5.08	16.0	302.58	48.25
TOTAL CHARGES			**1,114.26**			**456.17**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-3

CHOLECYSTECTOMY SURGERY BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			**DIFFERENT PHYSICIAN**		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	**Percent of Patients**	Per User	Per Patient
Medical Care						
Office visits	11.1%	$37.25	$4.13	49.8%	$52.04	$25.89
ER visits	0.5	31.15	.16	7.5	44.04	3.31
Hospital visits	4.5	119.06	5.38	45.3	221.60	100.29
Critical care visits	0.6	151.43	.90	8.7	319.53	27.70
Other	1.3	47.34	.60	13.6	103.82	14.14
Consultations	1.5	93.47	1.37	18.9	149.67	28.34
Surgery						
Swan Ganz	0.1	344.86	.43	1.1	357.24	3.84
Other	7.5	411.05	30.70	15.5	443.99	69.02
Radiology						
Head CAT scan	0.04	66.63	.03	2.3	110.44	2.51
Other	1.4	87.34	1.23	55.9	137.15	76.66
Laboratory	2.9	30.69	.90	39.5	57.51	22.70
Other Tests	1.0	77.17	.78	30.9	96.85	29.94
All Other Charges	0.8	101.34	.84	19.2	180.38	34.56
TOTAL CHARGES			**47.45**			**438.90**

Source: BMAD linked beneficiary file, 1987.

bill for office visits up to seven days before surgery. Twelve percent had hospital visits billed by their primary surgeon, over half of these hospital visits occurring just one day prior to the surgery, as indicated at the bottom of the table (although a patient may have more than one visit or consult, there is usually just one). Over one fifth of cholecystectomy patients had consultations billed by their primary surgeon. Forty percent of these consultations occurred one day prior to the cholecystectomy surgery. Other physicians were also submitting bills for office, emergency room and hospital visits and consultations during the preoperative period.

Services other than medical care have been displayed individually in Table 3-1 if at least one percent of cholecystectomy patients have received this service. Less frequently billed services have been grouped together by type of service category. For the most part, the procedures, X-rays, and diagnostic tests that are done as part of the preoperative work-up are performed by a physician other than the primary surgeon.

Table 3-2 presents the billings that occurred on the same day as the cholecystectomy surgery. Once again, services are displayed according to type of service category, with only those services occurring most frequently displayed individually. Looking first at the top of the table, the average allowed charge from the primary surgeon performing the cholecystectomy surgery is $933. Nearly half of the patients have co-surgeon or assistant surgeons involved with, and billing for, the cholecystectomy surgery. The average allowed charge for assistant fees is nearly $200, over 20 percent of the global fee for the surgery. (This average could include patients receiving services from more than one assistant surgeon, although this almost never occurrs with cholecystectomy surgery.)

Very few services are performed by the primary surgeon on the day of the cholecystectomy surgery. A small percentage of patients receive hospital visits or consultations by the primary surgeon (3.4 and 4.4 percent, respectively). The primary surgeon sometimes performs additional surgical procedures during the cholecystectomy operation. The most frequently occurring procedures are listed individually under the surgery type of service. Fifteen percent of cholecystectomy patients receive some other surgical procedure from the primary surgeon that is not separately displayed.

This residual category represents a wide variety of surgical procedures, each one occurring less than one percent of the time.

Table 3-3 summarizes the postoperative billings for cholecystectomy patients. Billings up to 90 days after surgery or hospital readmission (whichever comes first) are included in this table. We used a 90 day postoperative period, however different carriers have different time periods that are procedure specific for global fees. This issue will be looked at more directly in Chapter 4.

Looking first at the medical care services, 11 percent of cholecystectomy patients receive office visit bills from their primary surgeon. Since the postoperative period used for this analysis does not include readmissions, the hospital visits presented on this table are all for the index cholecystectomy admission. Almost 5 percent of patients receive hospital visits from their primary surgeon. Physicians other than the primary surgeon are much more likely to be billing for postoperative visits. These visits could be either for post-surgical care or the treatment of other medical problems. The primary surgeon bills very infrequently for other types of services and procedures during the postoperative period.

Partial Colectomy: The next three tables summarize the billings for another general surgical procedure: partial colectomy. The pattern of preoperative visits and consultations billed by the primary surgeon is similar to that observed for the cholecystectomy (Table 3-4). Primary surgeons bill relatively frequently for office and hospital visits, and consultations, with half of the hospital visits occurring one day prior to surgery. Other physicians are also billing for visits and consultations during this preoperative period.

Over 12 percent of partial colectomy patients received a preoperative lower G.I. endoscopy from their primary surgeon. No other procedure or service is performed by the primary surgeon with any frequency.

Table 3-5 presents the physician billings for the day of the partial colectomy surgery. The average allowed charge for the surgery is $1,308 and over 44 percent of the primary surgeons receive assistance during the surgery. As was the case with cholecystectomy, very few bills are submitted

TABLE 3-4

PREOPERATIVE BILLINGS FOR PARTIAL COLECTOMY (n=5,118)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office visits	9.1%	$30.65	$2.78	15.5%	$31.33	$4.87
ER visits	0.4	32.77	.14	9.8	45.63	4.45
Hospital visits	13.9	85.31	11.90	44.5	207.92	92.50
Critical care visits	0.4	124.84	.49	3.8	193.55	7.37
Other	0.6	34.01	.21	4.4	76.89	3.35
Consultations	19.2	79.40	15.25	31.2	114.83	35.83
Surgery						
Injection procedures	2.0	122.63	2.42	2.6	122.11	3.15
Upper G.I. endoscopy	0.7	274.43	2.04	4.0	314.35	12.71
Lower G.I. endoscopy	12.3	261.32	32.22	21.1	399.46	84.22
Cystourethroscopy	0.04	106.00	.04	1.0	135.43	1.30
Swan Ganz	0.2	319.28	.62	1.0	350.78	3.43
Other	1.3	822.78	11.09	4.0	442.46	17.64
Radiology						
Abdominal x-rays	0.4	32.59	.13	22.6	26.56	5.99
Abdominal CAT scans	0.1	107.10	.06	11.5	123.06	14.16
Barium enema	0.4	62.05	.22	21.5	39.60	8.51
Abdominal and retroperitoneal echography	0.1	57.46	.08	5.6	56.21	3.13
Other	1.5	49.56	.76	70.4	53.45	37.61
Laboratory						
Surgical pathology	0.4	44.18	.17	21.0	68.68	14.40
Other	1.5	28.68	.42	11.3	38.38	4.33
Other Tests						
Electrocardiograms	1.6	21.31	.33	56.9	17.10	9.72
Other	0.4	72.98	.33	9.3	86.86	8.06
All Other Charges	0.8	145.37	1.11	10.3	240.51	24.77
TOTAL CHARGES			**82.81**			**401.50**
ONE DAY PREOPERATIVE						
Office visits	0.4	26.75	.11	1.1	28.40	.32
ER visits	0.8	42.26	.03	2.5	47.11	1.18
Hospital visits	6.5	49.00	3.16	22.1	104.11	22.99
Critical care visits	0.2	62.43	.10	2.0	124.37	2.48
Consultations	5.3	73.01	3.96	13.5	94.30	12.71
TOTAL MEDICAL CARE			**7.36**			**39.68**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-5

PARTIAL COLECTOMY BILLINGS FOR THE SAME DAY AS THE INDEX SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary surgeon	100.0%	$1,307.67	$1,307.67			
Co-surgeon or assistant surgeon				44.1%	$276.19	$121.85
Anesthesia				55.3	325.47	179.84
Medical Care						
Office visits	0.2%	$37.88	$.08	0.8%	$31.59	$.25
Hospital visits	2.2	65.31	1.44	20.1	121.34	24.37
Critical care visits	0.5	172.35	.81	7.2	143.94	10.35
Other	0.4	39.84	.14	4.2	71.46	3.00
Consultations	4.4	80.53	3.54	10.5	92.47	9.72
Surgery						
Injection procedures	4.2	101.49	4.20	8.2	108.39	8.87
Gastrostomy	1.8	286.38	5.26	0.04	215.50	.08
Intestinal incisions	1.8	414.94	7.54	0.04	185.25	.07
Enterectomy	2.8	651.42	18.33	0.1	361.75	.28
Lower G.I. endoscopy	2.6	127.83	3.30	1.9	353.55	6.84
Cholecystectomy	4.4	467.70	20.47	0.03	668.05	.26
Hernia repair	2.9	358.97	10.45	0.1	310.52	.18
Swan Ganz	0.6	238.51	1.40	2.5	302.14	7.67
Other	14.8	477.01	70.55	8.1	466.44	37.64
Radiology						
Abdominal x-rays	0.1	28.88	.03	10.8	18.78	2.03
Barium enema	0.0	0.00	0.00	2.2	34.07	.75
Other	3.5	299.06	10.58	28.4	32.48	9.23
Laboratory						
Surgical pathology	0.8	84.89	.70	50.3	116.86	58.82
Other	0.1	58.45	.08	2.6	30.32	.78
Other Tests						
Electrocardiograms	0.4	12.45	.05	15.2	16.01	2.44
Other	0.1	119.01	.16	3.4	82.19	2.78
All Other Charges	0.5	118.65	.60	1.4	146.01	2.05
TOTAL CHARGES			**1,467.38**			**490.15**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-6

PARTIAL COLECTOMY BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care						
Office visits	9.9%	$37.38	$3.70	44.5%	$57.31	$25.53
ER visits	0.6	29.30	.18	8.2	40.82	3.35
Hospital visits	5.6	134.42	7.54	51.4	285.41	146.66
Critical care visits	0.9	294.00	2.76	13.8	339.69	46.79
Other	1.8	46.47	.82	14.3	107.39	15.34
Consultations	2.0	95.30	1.86	30.7	155.81	47.76
Surgery						
Injection procedures	3.8	161.45	6.09	6.5	146.70	9.57
Upper G.I. endoscopy	0.3	291.89	.86	1.5	372.84	5.76
Lower G.I. endoscopy	2.2	132.37	2.92	2.0	371.25	7.33
Cystourethoscopy	0.1	105.62	.10	1.5	133.22	2.03
Other	9.7	686.29	66.51	14.0	478.38	66.83
Radiology						
Abdominal X-rays	0.5	37.60	.20	22.1	32.48	7.17
Abdominal CAT scans	0.1	222.54	.22	7.3	148.35	10.90
Abdominal and retroperitoneal ehocardiography	0.1	108.47	.06	3.4	64.38	2.16
Pulmonary perfusion imaging	0.1	58.13	.03	1.7	72.70	1.21
Therapeutic radiology	0.1	1,266.99	1.00	2.1	1,602.51	33.19
Other	1.1	64.89	.71	53.8	95.44	51.39
Laboratory						
Surgical pathology	0.2	53.88	.09	27.9	102.32	28.57
Other	3.0	30.18	.91	22.1	34.67	8.77
Other Tests						
Electrocardiograms	0.7	30.22	.22	30.3	30.91	9.35
Ventilator management	0.04	413.80	.16	1.3	333.69	4.37
Other	0.8	157.17	1.30	15.2	182.44	27.80
All Other Charges	0.7	53.27	.40	23.1	231.13	53.33
TOTAL CHARGES			**98.64**			**615.16**

Source: BMAD linked beneficiary file, 1987.

for visits or consultations from the primary surgeon on that day. However, one fifth of all partial colectomy patients received hospital visits from a different physician.

There are also very few bills submitted by the primary physician for other services on that day. The most commonly submitted bills are for surgical procedures. Once again, the most frequent procedures are listed separately and the remaining services are summed together in the other category under surgery.

Table 3-6 presents the partial colectomy billings for up to 90 days after surgery and prior to any readmission. About 10 percent of patients had their primary surgeon submit bills for office visits during this postoperative period. Primary surgeons submitted bills for hospital visits 6 percent of the time. Billings for visits from other physicians occurred much more frequently. In addition, nearly a third of partial colectomy patients had consultations from other physicians during the postoperative period. Most of the other billing activity during the postoperative period was from physicians other than the primary surgeon.

Carotid Thromboendarterectomy: The next three tables summarize the billings for carotid thromboendarterectomy. This surgery is generally performed by either a general or thoracic surgeon. Table 3-7 presents the preoperative billings for this surgery. Visit and consult billing activity is similar to that for the other general surgeries. Bills are submitted most commonly for office and hospital visits and consultations with half of the hospital visits occurring the day before surgery. There are very few other billings from the primary surgeon during the seven days prior to surgery.

Table 3-8 displays the billings for the day of carotid thromboendarterectomy surgery. The average allowed charge for the primary surgeon is $1,612. About half of the time there is at least one co-surgeon or assistant surgeon involved in the thromboendarterectomy surgery. This adds another $361 in allowed charges. As was the case with cholecystectomies and partial colectomies, there are very few visits provided by the primary surgeon

TABLE 3-7

PREOPERATIVE BILLINGS FOR CAROTID THROMBOENDARTERECTOMY (n=2,620)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			Average Allowed Charge	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office visits	9.1%	$31.86	$2.89	19.4%	$36.48	$7.06
ER visits	0.2	52.90	.12	6.9	43.66	3.03
Hospital visits	18.7	81.06	15.19	43.8	186.33	81.57
Critical care visits	0.3	127.24	.44	4.4	217.96	9.57
Other	0.1	44.73	.05	4.2	84.70	3.59
Consultations	20.6	81.61	16.82	33.4	119.51	39.87
Surgery						
Injection procedures	3.5	292.80	10.17	14.2	268.41	38.01
Other	1.6	1,113.16	17.42	8.1	686.43	55.80
Radiology						
Head or brain CAT scans	0.2	71.60	.16	18.9	113.11	21.33
Angiocardiography	0.04	284.10	.11	1.5	156.23	2.39
Thoracic aortography	0.3	258.43	.79	10.7	179.68	19.20
Cervicocerebral angiography	1.0	369.44	3.81	23.6	340.57	80.46
Abdominal aortography	0.3	304.38	.93	9.1	234.97	21.43
Cervical or carotid angiography	0.7	430.67	2.96	20.8	304.97	63.44
Extremity angiography	0.1	113.43	.13	3.3	212.56	7.06
Coronary angiography	0.04	80.80	.03	2.5	119.07	2.95
Other	1.6	138.28	2.16	67.7	51.76	35.03
Laboratory						
Clinical pathology consultations	0.04	7.70	.003	1.5	31.69	.47
Surgical pathology	0.0	0.00	0.00	4.1	43.51	1.79
Other	0.6	39.62	.23	5.1	23.90	1.21
Other Tests						
Electrocardiogram	1.5	20.70	.30	63.9	19.69	12.58
Non-invasive studies of cerebral and carotid arteries	3.4	141.50	4.86	13.1	113.57	14.83
EEG	0.1	47.75	.04	4.8	40.04	1.92
Other	2.1	94.51	1.95	17.8	114.87	20.47
All Other Charges	0.7	224.26	1.54	12.2	232.70	28.33
TOTAL CHARGES			**83.10**			**573.39**
ONE DAY PREOPERATIVE						
Office visits	1.0	27.11	.26	1.6	34.88	.57
ER visits	0.1	38.10	.03	0.6	46.33	.27
Hospital visits	10.1	53.82	5.44	21.4	79.85	17.10
Critical care visits	0.2	60.18	.09	1.7	152.80	2.57
Consultations	7.3	79.24	5.78	15.0	93.96	14.09
TOTAL MEDICAL CARE			**11.60**			**34.60**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-8

CAROTID THROMBOENDARTERECTOMY BILLINGS FOR THE SAME DAY AS SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary surgeon	100.0%	$1,611.83	$1,611.83			
Co-surgeon or assistant surgeon				47.5%	$361.47	$171.77
Anesthesia				66.4	390.84	259.42
Medical Care						
Office visits	0.04%	$25.00	$.01	0.5%	$39.12	$.19
Hospital visits	2.6	55.16	1.43	19.5	94.03	18.34
Critical care visits	0.6	110.60	.63	10.8	106.54	11.47
Other	0.3	61.79	.21	3.1	99.87	.21
Consultations	3.4	77.60	2.61	8.9	90.58	8.06
Surgery						
Injection procedures	5.4	135.20	7.33	18.5	103.79	19.26
Embolectomy or thrombectomy	1.6	515.71	8.27	0.1	329.58	.38
Direct repair of aneurysm or excision and graft insertion	1.2	2,072.69	24.53	0.1	1,424.67	1.63
Vein bypass graft	2.1	1,743.66	36.60	0.04	610.00	.23
Bypass graft, other than vein	3.1	1,919.79	58.62	--	--	--
Swan-Ganz	0.4	268.01	1.13	2.2	251.35	5.47
Other	5.8	1,186.72	68.39	2.6	1,538.60	39.35
Radiology						
Head or brain CAT scans	0.04	33.60	.01	1.6	92.15	1.48
Thoracic aortography	0.08	138.55	.11	1.4	141.91	1.95
Cervicocerebral angiography	0.2	359.07	.82	2.6	342.86	8.90
Cervical carotid angiography	0.6	129.44	.74	3.2	201.37	6.38
Extremity angiography	0.5	208.08	1.03	2.3	114.91	2.68
Other	0.6	84.47	.55	23.1	42.03	9.69
Laboratory						
Surgical pathology	0.08	37.09	.28	52.4	38.82	20.08
Other	0.04	121.80	.55	1.2	31.18	6.59
Other Tests						
Non-invasive studies of cerebral and carotid arteries	0.6	48.26	.28	1.0	79.86	.76
Electrocardiograms	0.04	14.60	.06	19.1	16.23	3.10
EEG	0.04	26.61	.01	2.2	45.91	1.00
Other	0.3	80.78	.28	6.6	99.18	6.56
All Other Charges	1.7	396.89	6.82	27.5	491.31	135.21
TOTAL CHARGES			**1,833.13**			**740.16**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-9

CAROTID THROMBOENDARTERECTOMY BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care						
Office visits	7.9%	$32.80	$2.59	58.7%	$56.66	$33.26
ER visits	0.3	32.69	.11	9.1	45.03	4.11
Hospital visits	4.9	107.39	5.25	49.8	195.79	97.52
Critical care visits	0.8	117.20	.89	14.5	259.69	37.76
Other	0.9	56.56	.52	15.3	86.84	13.29
Consultations	1.7	91.64	1.54	24.6	152.77	37.61
Surgery						
Injection procedures	1.3	181.29	2.28	6.5	122.78	7.92
Thromboendarterectomy	3.9	1,665.25	64.19	0.4	1,408.53	5.38
Swan-Ganz	0.3	371.27	.99	1.8	319.62	5.73
Other	8.4	1,462.39	122.80	14.4	758.39	108.84
Radiology						
Head or brain CAT scans	0.2	66.90	.10	6.9	132.22	8.51
Carotid angiography	0.0	--	--	1.4	209.88	2.88
Other	1.3	160.52	2.02	45.3	109.50	49.65
Laboratory						
Clinical pathology consultations	0.04	23.10	.01	1.7	59.42	1.00
Surgical pathology	0.2	50.80	.08	28.3	44.01	12.46
Other	0.7	28.53	.20	22.3	26.77	5.98
Other Tests						
Electrocardiograms	0.8	31.66	.24	38.4	32.61	12.52
Non-invasive studies of cerebral and carotid arteries	3.6	148.20	5.32	5.7	146.36	8.32
EEGs	0.1	51.30	.06	2.4	51.30	1.21
Other	2.4	121.04	2.91	19.3	163.12	.30
All Other Charges	0.6	155.91	1.01	24.5	411.48	100.99
TOTAL CHARGES			**213.11**			**555.24**

Source: BMAD linked beneficiary file, 1987.

on the day of surgery. The primary surgeon occasionally performs other surgical procedures during the index thromboendarterectomy surgery, including bypass grafts and aneurysm repair.

Visits and consults are most often performed by a physician other than the primary surgeon during the postoperative period (Table 3-9). Almost sixty percent of patients receive office visits and 50 percent receive hospital visits from a different physician during this period. Most other services are provided by other physicians as well. A small percentage (3.9 percent) of patients receive a second thromboendarterectomy from their primary surgeon within 90 days after the index surgery.

3.2 Orthopedic Surgical Procedures: Total Knee Replacement and Total Hip Replacement

Total Knee Replacement: Tables 3-10, 3-11 and 3-12 summarize the billings for patients receiving a total knee replacement. They follow the same format as the general surgery tables. Table 3-10 presents preoperative billings for total knee replacement surgery. About 10 percent of patients have bills submitted by the primary surgeon for office visits during the preoperative period. Thirteen percent of patients having total knee replacement surgery had hospital visits billed by their surgeon, with the vast majority of these visits occurring just one day prior to the surgery. Other physicians also billed for medical care visits during the preoperative period. Most of the consultation bills were submitted by physicians other than the primary surgeon. These consultations usually occurred one day prior to surgery. The small number of consultations attributed to the orthopedic surgeon (compared with the general surgeons seen earlier) may simply reflect the nature of the procedure. Unlike colectomy and cholecystectomy, which often are of an acute nature, joint replacements are discretionary procedures that are scheduled well in advance. Orthopedic surgeons may have provided a consultation, but well before the operation (e.g., a month or more).

Billings by the primary surgeon for diagnostic tests and services during the preoperative period are infrequent, the most common service being knee X-

TABLE 3-10

PREOPERATIVE BILLINGS FOR TOTAL KNEE REPLACEMENT (n=2,894)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office visits	10.4%	$27.51	$2.85	14.9%	$33.07	$4.94
ER visits	0.1	20.30	.01	0.7	32.94	.23
Hospital visits	12.5	62.09	7.79	12.6	122.25	15.42
Critical care visits	0.03	108.00	.04	0.2	65.57	.14
Other	0.1	104.13	.14	1.7	65.02	1.10
Consultations	2.2	74.46	1.65	29.2	88.90	25.93
Surgery						
Injection procedures	0.5	3.00	.01	2.9	12.16	.35
Other	0.6	288.64	1.80	1.6	297.29	4.62
Radiology						
Knee X-ray	6.4	37.63	2.42	23.5	19.67	4.62
Bone length studies	0.6	45.71	.28	1.5	24.91	.36
Other	3.9	36.55	1.41	67.2	23.90	16.05
Laboratory						
Surgical pathology	0.0	0.00	0.00	3.9	42.59	1.65
Other	1.0	39.03	.40	6.0	62.66	2.11
Other Tests						
Electrocardiograms	2.0	22.86	.45	59.2	15.90	9.41
Other	0.8	34.29	.26	4.7	73.13	3.41
All Other Charges	0.2	123.57	.26	3.2	331.42	10.65
TOTAL CHARGES			**19.77**			**100.99**
ONE DAY PREOPERATIVE						
Office visits	2.1	23.86	.51	1.4	36.39	.49
Hospital visits	10.6	56.20	5.96	10.5	108.72	11.46
ER visits	0.03	29.10	.01	0.1	45.73	.03
Critical care visits	0.03	108.00	.04	0.1	75.11	.10
Consultations	1.4	74.11	1.02	23.8	86.37	20.59
TOTAL MEDICAL CARE			**7.54**			**32.67**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-11

TOTAL KNEE REPLACEMENT BILLINGS FOR THE SAME DAY AS THE INDEX SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary surgeon	100.0%	$2,429.48	$2,429.48			
Co-surgeon or assistant surgeon				47.0%	$499.03	$234.69
Anesthesia				68.6	313.13	214.67
Medical Care						
Office visits	0.2%	$311.61	$.75	0.1%	$20.95	$.01
Hospital visits	0.04	69.33	2.90	21.3	142.87	30.41
Critical care visits	0.0	0.00	0.00	1.3	103.03	1.32
Other	0.03	36.75	.01	1.0	102.31	.99
Consultations	0.8	72.30	.57	11.6	90.69	10.53
Surgery						
Lateral retinacular release	2.1	364.96	7.69	0.2	228.99	.40
Arthroplasty	1.0	515.34	5.16	0.0	0.00	0.00
Injection procedures	0.03	14.20	.004	2.0	91.37	1.80
Other	4.4	475.53	20.70	2.2	262.11	5.71
Radiology						
Knee X-rays	1.7	22.17	.38	57.7	13.79	7.96
Other	0.1	29.71	.03	13.9	20.14	2.79
Laboratory						
Surgical pathology	1.0	25.99	.25	48.4	41.53	20.09
Other	0.1	15.59	.02	0.6	32.78	.18
Other Tests						
Electrocardiograms	0.3	13.93	.04	11.3	12.75	1.44
Other	0.03	13.10	.005	1.4	55.66	.77
All Other Charges	0.03	7.50	.003	0.3	189.79	.52
TOTAL CHARGES			**2,467.99**			**534.28**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-12

TOTAL KNEE REPLACEMENT BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care						
Office visits	13.6%	$35.67	$4.84	42.6%	$42.07	$17.91
ER visits	0.6	37.73	.21	4.7	42.19	2.00
Hospital visits	3.5	99.27	3.46	41.3	217.59	89.85
Critical care visits	0.1	96.87	.10	2.8	172.53	4.89
Other	3.1	60.66	1.87	11.7	73.66	8.65
Consultations	0.8	62.71	.52	22.7	129.80	29.42
Surgery						
Arthrocentesis	3.1	35.99	1.13	1.2	37.17	.46
Knee replacement	2.0	2,059.66	40.57	5.9	508.94	30.07
Manipulation of knee joint	1.1	124.18	1.42	1.1	104.00	1.11
Injection procedures	0.4	19.06	.08	9.0	21.17	1.90
Other	2.8	369.78	10.35	10.0	457.36	45.51
Radiology						
Knee X-rays	52.5	44.32	23.28	31.4	24.88	7.81
Pulmonary imaging	0.1	167.47	.17	4.7	93.95	4.42
Other	5.7	51.13	2.90	35.3	71.16	25.16
Laboratory						
Surgical pathology	0.2	29.28	.07	20.8	47.16	9.83
Other	1.0	23.83	.25	17.3	26.41	4.58
Other Tests						
Electrocardiogram	0.3	21.62	.07	20.0	26.19	5.25
Echocardiography	0.1	100.88	.07	1.5	120.29	1.83
Physical medicine	3.8	226.61	8.54	1.2	211.78	2.56
Other	1.2	57.84	.68	9.3	84.42	7.82
All Other Charges	1.0	13.27	.13	7.5	221.34	16.67
TOTAL CHARGES			**100.71**			**317.70**

Source: BMAD linked beneficiary file, 1987.

rays (over six percent of patients). The average allowed charge for this service is $37, twice the amount billed when other physicians perform the X-ray, presumably reflecting multiple x-rays.

Table 3-11 presents the billings that occurred on the same day as the total knee replacement surgery. The average allowed charge for the surgery is $2,429. Nearly half of the patients had bills submitted by a co-surgeon or assistant surgeon for knee replacement surgery, with an average allowed charge for assistants of $483. However, because of idiosyncratic coding practices across carriers, we could not always distinguish between a co-surgeon's bill and bilateral knee replacements performed during the same surgery. Therefore, second knee replacement bills are included with co-surgeons' or assistant surgeons' bills.

There is very little billing activity from the primary surgeon on the day of the surgery, apart from the global fee for the total knee replacement itself. One fifth of patients receive hospital visits and 12 percent receive consultations from a physician other than their surgeon. Other services frequently billed by a physician other than the surgeon include knee X-rays, surgical pathology and electrocardiograms.

Table 3-12 displays the postoperative billings for up to 90 days after the total knee replacement surgery and prior to a readmission. Fourteen percent of patients have their primary surgeon bill for office visits during this period. Billings for visits from other physicians occur relatively more frequently. For example, the primary surgeon submits hospital visit bills less than 4 percent of the time, while 41 percent of patients receive hospital visits from other physicians during their postoperative stay in the hospital.

Over half of patients receiving total knee replacement surgery have their primary surgeon perform knee X-rays during the postoperative period. There is very little billing for other services by the primary surgeon during this 90 day period.

Total Hip Replacement: The next three tables summarize the billings for total hip replacement surgery. Table 3-13 presents the preoperative billings. The primary surgeon submits bills for office and hospital visits

TABLE 3-13

PREOPERATIVE BILLINGS FOR TOTAL HIP REPLACEMENT (n=3,533)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			Average Allowed Charge	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office visits	8.8%	$30.37	$2.68	14.2%	$34.81	$4.95
ER visits	0.4	38.04	.16	8.6	47.08	4.04
Hospital visits	14.2	66.92	9.47	19.9	158.59	31.60
Critical care visits	0.03	55.60	.02	1.0	188.14	1.85
Other	0.6	37.30	.23	3.3	72.25	2.40
Consultations	4.9	91.86	4.52	30.8	94.89	29.19
Surgery						
Arthrocentesis	0.02	34.57	.06	0.1	24.10	.02
Other	1.2	305.32	3.70	3.2	256.24	8.15
Radiology						
Hip X-ray	4.6	38.92	1.79	32.3	21.21	6.85
Other	4.3	41.75	1.77	69.7	31.22	21.64
Laboratory	1.2	47.57	.56	10.0	32.75	3.26
Other Tests	1.9	32.90	.63	59.8	21.25	12.63
All Other Charges	0.7	50.51	.34	8.4	216.98	18.14
TOTAL CHARGES			**25.93**			**144.72**
ONE DAY PREOPERATIVE						
Office visits	1.8	30.63	.55	1.3	40.26	.52
ER visits	0.3	42.08	.12	4.4	49.05	2.15
Hospital visits	11.2	57.58	6.43	14.3	112.20	16.04
Critical care visits	0.03	55.60	.02	0.6	117.88	.66
Consultations	3.0	90.54	2.73	23.6	87.64	20.67
TOTAL MEDICAL CARE			**9.85**			**40.04**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-14

TOTAL HIP REPLACEMENT BILLINGS FOR THE SAME DAY AS THE INDEX SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary surgeon	100.0%	$2,578.00	$2,578.00			
Co-surgeon or assistant surgeon				47.8%	$536.17	256.09
Anesthesia				69.9	390.21	272.81
Medical Care						
Office visits	0.2%	$30.57	$.06	0.3%	$27.60	$.07
ER visits	0.3	51.52	.14	1.7	46.89	.80
Hospital visits	3.9	68.40	2.69	24.9	151.00	37.60
Critical care visits	0.03	55.60	.02	1.9	122.29	2.27
Other	0.08	36.63	.03	1.0	150.97	1.44
Consultations	1.5	93.20	1.44	12.0	95.00	11.48
Surgery						
Hemiarthroplasty	0.1	837.60	.94	3.3	318.10	10.56
Removal of implant	1.4	163.20	2.30	0.3	136.00	.46
Removal of hip prosthesis	1.6	594.50	9.54	1.1	243.90	2.75
Repair of fracture	0.6	910.00	5.12	5.9	329.50	19.29
Bone graft, any area	1.7	310.10	5.41	0.4	98.10	.39
Other	3.1	493.52	15.00	6.6	195.37	12.76
Radiology						
Hip X-rays	1.0	21.70	.22	53.9	16.80	9.04
Other	0.7	15.44	.11	32.0	17.82	5.67
Laboratory	0.7	25.64	.18	44.4	44.17	19.51
Other Tests	0.3	25.15	.08	14.5	18.85	2.72
All Other Charges	0.4	159.85	.63	8.5	236.95	20.07
TOTAL CHARGES			**2,621.91**			**685.78**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-15

TOTAL HIP REPLACEMENT BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
	Percent of Patients	Average Allowed Charge		Percent of Patients	Average Allowed Charge	
		Per User	Per Patient		Per User	Per Patient
Medical Care						
Office visits	11.7%	$34.20	$4.00	36.0%	$43.80	$15.80
ER visits	0.4	36.40	.15	7.1	45.60	3.30
Hospital visits	3.8	111.60	4.21	49.0	253.80	124.30
Critical care visits	0.0	0.00	0.00	4.5	192.06	8.59
Other	2.2	38.54	.86	18.2	93.26	16.90
Consultations	1.1	76.50	.82	26.9	138.40	37.30
Surgery	7.2	792.00	56.62	14.4	397.26	57.02
Radiology	51.5	60.55	31.04	63.3	90.62	57.03
Laboratory	0.6	26.50	.16	35.4	40.76	14.33
Other Tests	1.5	100.26	1.52	29.9	67.01	19.95
All Other Charges	0.7	16.77	.11	19.8	274.70	54.20
TOTAL CHARGES			99.49			408.72

Source: BMAD linked beneficiary file, 1987.

for 9 and 14 percent of the total hip replacement patients, respectively. As was the case with knee replacement surgery, the majority of the hospital visits occurred one day prior to surgery.

Other billings from the primary surgeon during the preoperative period are small and are mostly X-rays and consults. There are more bills submitted from physicians other than the primary surgeon. Nearly a third of patients receive consultations from other physicians, the majority of them occurring the day before surgery. X-rays and other diagnostic tests are also billed frequently by other physicians during this period.

Table 3-14 presents the billings on the day of surgery for patients undergoing total hip replacement. The average allowed charge from the primary surgeon for the surgery is $2,578. About half of the surgeries are done with the assistance of a co-surgeon. The pattern of billings on the day of hip replacement surgery is very similar to that for knee replacement surgery. It is worth noting that a small percent of patients receive bills for removal of an implant or removal of an earlier prosthesis, either from their primary surgeon or a second surgeon.

Postoperative billings for total hip replacement surgery for up to 90 days after surgery and prior to a readmission are displayed in Table 3-15. About 12 percent of patients have their primary surgeon submit bills for office visits during this postoperative period. Over half of hip replacement patients receive x-rays from their primary surgeon.

There are relatively more services provided from a different physician than the primary surgeon during this postoperative period. Thirty-six percent of patients receive office visits from another physician and nearly half of hip replacement patients receive hospital visits. Consultations, x-rays, lab work, and tests are all services frequently performed and billed for by other physicians during this period.

3.3 Ophthalmologic Surgery: Lens Procedures and Laser Eye Surgery

The next two surgical procedures are ophthalmological services, lens procedures and laser eye surgery. These surgeries are most frequently performed on an outpatient basis. Nearly all of the lens procedures and laser eye surgeries in our data were performed in an outpatient setting.

Lens Procedures: Tables 3-16, 3-17 and 3-18 summarize the billings for patients undergoing lens procedure surgery. Table 3-16 presents the pre-operative billings for lens procedures. Looking first at medical care services, one fifth of all patients have a physician other than the primary submit a bill for office visits. Almost one-sixth receive bills from their primary ophthalmologist as well (14.5 percent, combining both office visits and eye exams.

Sixteen percent of patients have their primary surgeon bill for ophthalmic biometry during the seven days prior to surgery and 2 percent have ophthalmic ultrasound services performed by their primary surgeon. Table 3-17 summarizes the billings for the day of surgery. The average allowed charge is $1,633. There is very little visit and consultation billing activity from either the primary surgeon or another surgeon on the day of surgery. Billings for other services are for the most part, also small.

Table 3-18 presents the billings for up to 90 days after surgery or up to a hospital admission. Eleven percent of patients have their primary surgeon bill for eye exams during this postoperative period. Almost 8 percent of lens procedures patients have their primary surgeon submit bills for office visits. Nearly half of the patients receive office visits from a physician different from the surgeon during the postoperative period.

Nearly 8 percent of lens procedure patients receive another lens procedure operation from their primary surgeon within 90 days of the first surgery. An almost equal number (7 percent) undergo a second lens procedure from a different surgeon during this post-operative time period.

Laser Eye Surgery: The next three tables summarizes billings for laser eye surgery. Table 3-19 presents the physician billings during the seven days leading up to the laser eye surgery. There is very little billing activity, apart from eye exams performed by the primary surgeon and office visits provided by either the primary surgeon or a different physician. There are virtually no visits or consults the day before surgery.

TABLE 3-16

PREOPERATIVE BILLINGS FOR LENS PROCEDURES (n=41,619)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office visits	6.2%	$32.20	$1.99	20.7%	$33.06	$6.85
Hospital visits	0.6	59.24	.37	1.7	94.64	1.59
Eye exams	8.3	39.32	3.25	2.0	39.29	.78
Other	0.3	19.69	.06	1.3	31.43	.41
Consultations	0.9	78.20	.67	4.5	90.37	4.09
Surgery	0.6	336.15	1.92	1.7	91.23	1.54
Radiology						
Ophthalmic ultrasound	2.2	143.46	3.23	0.4	145.49	.55
Ophthalmic biometry	16.1	152.49	24.53	2.8	163.11	4.57
Other	0.6	58.00	.34	24.2	22.97	5.56
Laboratory	1.1	20.18	.21	9.5	20.30	1.92
Other Tests						
Ocular photography	3.9	112.42	4.43	0.8	127.45	.96
Other	5.1	49.38	2.51	30.3	26.12	7.92
All Other Charges	1.9	52.70	.99	6.3	86.21	5.47
TOTAL CHARGES			**44.50**			**42.21**
ONE DAY PREOPERATIVE						
Office visits	1.7	31.37	.55	2.7	32.37	.86
Hospital visits	0.3	57.16	.18	0.7	68.45	.49
Eye exams	1.8	38.32	.68	0.5	34.31	.16
Consultations	0.2	71.42	.16	3.0	97.16	1.51
TOTAL MEDICAL CARE			**1.57**			**3.02**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-17

LENS PROCEDURE BILLINGS FOR THE SAME DAY AS THE INDEX SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary surgeon	100.0%	$1,633.00	$1,633.00			
Co-surgeon or assistant surgeon				6.7%	$396.61	$26.48
Anesthesia				70.8	179.78	127.20
Medical Care						
Office visits	1.0%	$32.65	$.32	0.6%	$44.26	$.25
Hospital visits	1.5	59.75	.92	1.9	66.27	1.23
Eye exams	1.1	37.31	.39	0.2	38.03	.09
Other	0.3	33.30	.10	0.3	57.10	.19
Consultations	0.3	75.95	.19	3.3	93.57	3.12
Surgery						
Fistulization of sclera	1.3	585.88	7.54	0.4	254.38	.97
Other	4.8	657.24	31.29	0.9	210.10	1.99
Radiology						
Opthlamic biometry	4.7	150.08	7.03	0.8	160.81	1.36
Other	0.9	144.76	1.32	4.9	19.51	.95
Laboratory	1.1	14.57	.16	20.8	15.47	3.22
Other Tests						
Ocular photography	1.2	107.97	1.29	0.1	135.45	.19
Other	2.3	69.44	1.61	13.4	18.82	2.52
All Other Charges	3.4	131.51	4.42	12.6	310.04	39.08
TOTAL CHARGES			**1,689.58**			**208.84**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-18

LENS PROCEDURE BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			Average Allowed Charge	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care						
Office visits	7.6%	$52.66	$3.99	48.1%	$ 52.40	$25.20
Hospital visits	0.4	83.98	.33	7.1	302.24	21.37
Eye exams	11.1	75.88	8.40	6.2	79.24	4.88
Other	1.5	69.88	1.06	10.7	86.08	9.23
Consultations	0.3	80.32	.21	6.9	128.19	8.79
Surgery						
Lens procedure	7.6	1,509.71	115.21	7.0	228.37	16.02
Other	7.4	497.46	37.04	13.3	427.42	56.65
Radiology	4.3	157.98	6.73	18.7	110.59	20.64
Laboratory	0.4	21.07	.09	22.7	31.47	7.14
Other Tests	6.0	90.94	5.45	18.7	93.29	17.47
All Other Charges	2.8	116.72	3.25	19.3	198.30	38.33
TOTAL CHARGES			181.76			225.72

Source: BMAD linked beneficiary file, 1987.

TABLE 3-19

PREOPERATIVE BILLINGS FOR LASER EYE SURGERY (n=11,238)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			Average Allowed Charge	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Eye exams	9.1%	$36.98	$3.37	1.0%	$38.92	$.37
Office visits	5.2	24.77	1.29	10.0	27.42	2.74
ER visits	0.01	18.75	.002	0.3	28.28	.08
Hospital visits	0.04	79.52	.04	0.3	115.09	.36
Critical care visits	0.0	0.00	0.00	0.04	212.22	.09
Other	0.07	25.98	.02	0.6	25.72	.16
Consultations	0.2	65.51	.12	0.5	96.96	.44
Surgery	0.7	959.97	6.66	1.5	178.39	2.68
Radiology	0.3	159.39	.44	2.1	58.22	1.20
Laboratory	0.05	31.70	.02	3.2	18.85	.60
Other Tests						
Electrocardiogram	0.03	20.32	.01	1.3	30.91	.40
Other	2.2	52.13	1.16	1.2	76.06	.91
All Other Charges	0.5	49.73	.24	1.8	58.51	1.06
TOTAL CHARGES			13.37			11.09
ONE DAY PREOPERATIVE						
Eye exams	1.6	37.41	.59	0.02	38.59	.06
Office visits	0.9	25.00	.22	1.6	25.71	.41
ER visits	0.0	0.00	0.00	0.04	23.09	.01
Hospital visits	0.0	0.00	0.00	0.05	81.18	.04
Critical care visits	0.0	0.00	0.00	0.01	66.50	.01
Consultations	0.04	75.62	.03	0.20	84.03	.13
TOTAL MEDICAL CARE			**.84**			**.66**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-20

LASER EYE SURGERY BILLINGS FOR THE SAME DAY AS SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	**Percent of Patients**	Per User	Per Patient
Primary surgeon	100.0%	$496.39	$496.39			
Co-surgeon or assistant surgeon				0.6%	$252.20	$1.52
Medical Care						
Eye exams	12.8%	$36.44	$4.67	0.6%	$37.37	$.24
Office visits	3.5	24.73	.87	1.5	26.10	.38
Hospital visits	0.04	90.22	.04	0.08	97.62	.08
Critical care visits	0.0	0.00	0.00	0.03	75.83	.02
Other	0.2	24.06	.06	0.1	42.27	.05
Consultations	0.3	58.54	.19	0.2	101.51	.19
Surgery						
Lens procedures	0.3	1,506.45	4.42	0.03	1,875.00	.50
Other	1.1	376.21	4.25	0.3	300.99	.91
Radiology						
Ophthalmic ultrasound	0.2	197.70	.32	0.02	250.00	.04
Ophthalmic biometry	0.7	151.27	1.01	0.03	158.33	.04
Other	0.03	65.33	.02	0.3	39.79	.13
Laboratory	0.08	19.44	.02	0.5	17.41	.09
Other Tests	3.5	67.22	2.36	0.7	65.34	.48
All Other Charges	1.2	51.59	.62	0.7	263.28	1.94
TOTAL CHARGES			**515.24**			**6.61**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-21

LASER EYE SURGERY BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care						
Eye exam	3.4%	$47.43	$1.61	0.9%	$43.64	$.40
Office visits	2.2	35.42	.78	15.7	65.73	10.31
ER visits	0.02	34.19	0.006	3.6	52.95	1.92
Hospital visits	0.1	93.52	.11	6.3	320.07	20.14
Critical care visits	0.0	0.00	0.00	1.3	210.83	2.70
Other	0.07	29.70	.02	2.5	111.08	2.78
Consultations	.09	95.09	.09	4.2	148.40	6.26
Surgery						
Lens procedures	1.1	1,758.34	18.93	0.1	1,643.70	2.19
Discission of secondary	1.5	519.28	7.62	0.02	632.55	.11
cataract, laser surgery	0.1	883.08	1.18	0.08	955.87	.77
Other	0.9	762.12	6.92	6.3	756.85	47.55
Radiology	0.6	181.00	1.01	1.2	147.88	15.07
Laboratory						
Surgical pathology	0.009	80.00	.01	2.4	68.93	1.67
Other	0.04	32.40	.01	6.8	34.21	2.31
Other Tests						
Ophthalmoscopy	0.6	105.13	.68	0.5	119.48	.54
Electroretinography	0.05	53.38	.03	0.02	75.55	.01
Ocular photography	0.2	144.67	.26	0.03	66.13	.02
Electrocardiograms	0.06	27.33	.02	7.9	36.92	2.90
Other	0.8	54.16	.44	4.1	151.22	6.14
All Other Charges	0.3	84.25	.26	6.6	210.28	13.81
TOTAL CHARGES			39.99			137.60

Source: BMAD linked beneficiary file, 1987.

Table 3-20 displays the billings for the day of surgery. The average allowed charge for laser eye surgery is $496. Nearly 13 percent of patients receive bills from their primary surgeon for eye exams on the day of surgery. There is very little other billing activity by either the primary surgeon or a different physician.

Table 3-21 presents the postoperative billings for laser eye surgery. There is very little billing from the primary surgeon during this period. Patients have received services from other physicians, but relatively few as compared to lens procedures (see Table 3-18).

3.4 Cardiovascular Surgical Procedures: Coronary Artery Bypass Graft (CABG) and Permanent Pacemaker Insertion Surgery

Coronary Artery Bypass Graft (CABG) Surgery: Tables 3-22, 3-23, and 3-24 summarize the billings for those patients who had Coronary Artery Bypass Graft (CABG) surgery. Most of the preoperative visits are provided by a physician other than a primary surgeon (Table 3- 22). Just six percent of CABG patients received a bill for a hospital visit from their surgeon, while nearly 70 percent of the patients had another physician provide this service. Nearly one fifth of patients had consults billed by their surgeon, with almost one-half of these consults occurring just one day prior to the CABG surgery.

The primary surgeon performed very few other services during the preoperative period. Other physicians frequently performed coronary angiography, x-rays, and electrocardiograms.

Table 3-23 presents the billings that occurred on the same day as the CABG surgery. The average allowed charge from the primary surgeon for the index surgery is $4,152. Co-surgeons or assistants are used in the majority (60%) of the time. They add an average of $960 in allowed fees. Most of the bill for visits on the day of surgery have been submitted by physicians other than the primary surgeon.

TABLE 3-22

PREOPERATIVE BILLINGS FOR CORONARY ARTERY BYPASS GRAFT (CABG) SURGERY (n=4,934)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office visits	0.5%	$43.32	$.24	16.5%	$36.21	5.98
ER visits	0.2	39.20	.07	12.3	50.19	6.19
Hospital visits	6.1	93.27	5.69	68.8	193.97	133.47
Critical care visits	0.4	135.00	.57	22.1	217.78	48.20
Other	0.2	100.11	.16	5.4	124.04	6.71
Consultations	19.2	83.60	16.07	37.8	123.62	46.65
Surgery						
Insertion of systematic arterial monitoring	0.08	87.10	.07	1.6	80.95	1.31
Coronary angiography	1.6	759.61	12.32	53.2	775.97	413.15
Percutaneous insertion, arterial balloon	0.06	440.29	.27	1.1	845.95	9.09
Cardiac catheterization	0.2	386.50	.71	6.0	392.37	23.46
PTCA	0.1	1,162.40	1.18	1.5	1,404.33	21.63
Other	1.4	913.14	12.40	11.6	339.67	39.24
Radiology						
Chest x-rays	1.4	33.74	.47	77.0	24.79	19.08
Other	0.4	144.98	.65	22.9	145.70	33.43
Laboratory	0.2	46.76	.08	11.8	45.31	5.35
Other Tests						
Electrocardiogram	2.1	53.81	1.13	77.5	41.08	31.84
Stress tests	0.1	55.33	.07	6.8	98.42	6.68
Echocardiography	0.2	100.86	.16	8.5	123.31	10.52
Arteriography	0.6	95.07	.60	5.6	89.17	4.97
Other	0.9	66.97	.62	20.6	72.03	14.80
All Other Charges	0.3	638.34	2.20	8.0	431.89	34.58
TOTAL CHARGES			55.73			**916.33**
ONE DAY PREOPERATIVE						
Office visits	0.02	77.60	.02	0.9	42.88	.36
ER visits	0.04	33.53	.01	1.2	52.00	.62
Hospital visits	3.5	58.35	2.03	30.0	79.62	23.92
Critical care visits	0.2	61.58	.14	8.4	119.15	10.00
Consultations	9.1	83.39	7.55	13.3	105.03	13.94
TOTAL MEDICAL CARE			**9.75**			**48.84**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-23

CORONARY ARTERY BYPASS GRAFT (CABG) BILLINGS FOR THE SAME DAY AS THE INDEX SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary Surgeon	100%	$4,152.00	$4,152.00	--	--	--
Co-surgeon or assistant surgeon				60.0%	$960.27	$576.08
Anesthesia				81.5	848.03	690.93
Medical Care						
Office visits	0.02%	$25.00	$.01	0.2%	$23.84	$.05
ER visits	0.02	27.00	.01	0.8	53.43	.43
Hospital visits	1.4	73.93	1.06	23.4	109.31	25.57
Critical care visits	0.6	88.68	.54	26.2	140.75	36.88
Other	0.1	50.33	.03	3.7	166.25	6.13
Consultations	5.4	77.91	4.17	8.0	98.41	7.84
Surgery						
Temporary or permanent pacemaker insertion	2.5	301.43	7.45	1.2	315.37	3.77
Valve replacement	7.3	2,396.37	175.33	0.08	1,531.90	1.24
Intra-aortic balloon catheter	3.1	456.82	14.26	1.0	668.36	6.50
Post-op surgery for bleeding	0.8	521.88	4.13	0.08	626.10	.51
Other	11.5	691.07	79.56	39.41	485.36	191.13
Radiology	1.5	18.08	.27	79.9	27.48	21.96
Laboratory	0.4	54.83	.22	16.3	40.37	6.56
Other Tests	4.3	194.77	8.33	56.3	64.11	36.12
All Other Charges	3.9	459.73	18.08	22.1	586.12	129.36
TOTAL CHARGES			**4,465.45**			**1,741.06**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-24

CORONARY ARTERY BYPASS GRAFT BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care						
Office visits	3.1%	$38.56	$1.18	66.6%	$80.22	$53.43
ER visits	0.5	32.17	.16	11.8	44.86	5.27
Hospital visits	3.1	176.85	5.56	70.5	349.47	246.27
Critical care visits	0.9	176.80	1.58	34.8	407.43	141.95
Other	0.5	58.42	.32	13.3	171.52	22.77
Consultations	1.3	118.82	1.52	31.0	195.26	60.51
Surgery						
Post-op surgery for bleeding	0.7	839.33	5.61	1.1	514.23	5.52
Other	8.2	851.38	69.71	24.0	544.24	130.38
Radiology	3.6	59.24	2.14	88.8	134.55	119.42
Laboratory	0.9	30.66	.29	36.6	47.89	17.53
Other Tests	4.6	90.88	4.20	84.7	185.84	157.33
All Other Charges	0.2	75.00	.17	27.1	288.89	78.34
TOTAL CHARGES			92.44			1,038.72

Source: BMAD linked beneficiary file, 1987.

Over 7 percent of patients undergo valve replacements, a major open heart procedure, performed by the same surgeon doing the bypass surgery. Primary surgeons are also billing for pacemaker insertion and intra-aortic balloon catheters, although not as often.

Table 3-24 summarizes the postoperative billings for CABG patients. Relatively few patients receive postoperative visit bills from their primary surgeon. Most of the postoperative billing that does take place appears to be from other physicians. These services could be related directly to the CABG surgery or could be for another medical condition.

Permanent Pacemaker Insertion: The next three tables summarize the billings for permanent pacemaker insertion. These tables are different from the ones previously presented in this chapter because they include information on a second surgeon. Information on a second surgeon was included because previous research using a ten state Medicare database found that there was extensive use of the team approach in permanent pacemaker insertion in some areas of the country.* We defined the second surgeon as either a co- or assistant surgeon for the pacemaker insertion or a surgeon performing a repair or replacement of the pacemaker on the same day as the pacemaker insertion. Information on visits, consultations and other services provided for the second surgeon has been preserved separately from all other physicians.

Table 3-25 presents the preoperative billings. The billing activity from the second surgeon appears to be trivial, indicating that team-billing for pacemaker insertion on a national level is not as important as was indicated by the ten state database. Sixteen percent of pacemaker patients receive hospital visit bills from their primary surgeon during the seven day preoperative period, nearly half of these visits occurring on the day before surgery. Similarly, almost one-quarter (23.6 percent) received consultations from their surgeons, one-half in the day before and the other half during

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*Mitchell, Janet B. and Stephen M. Davidson, "Geographic Variation in Medicare Surgical Fees", Health Affairs, Winter 1989, pages 113-124.

TABLE 3-25

PREOPERATIVE BILLINGS FOR PERMANENT PACEMAKER INSERTION (n=3,486)

	PRIMARY SURGEON			SECOND SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			Average Allowed Charge			Average Allowed Charge	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE									
Medical Care									
Office visits	3.6%	$37.79	$1.38	0.6%	$34.97	$.22	20.4%	$30.26	$6.17
ER visits	0.3	40.24	.13	0.03	31.00	.01	21.2	49.32	10.44
Hospital visits	16.1	121.15	19.46	2.5	137.59	3.39	57.9	203.41	117.75
Critical care visits	4.6	163.54	7.46	1.1	212.53	2.44	22.1	237.66	52.43
Other	1.3	103.49	1.34	0.1	112.45	.13	6.0	88.44	37.70
Consultations	23.6	92.77	21.90	2.6	101.29	2.67	30.2	124.92	5.33
Surgery									
Insertion of temporary pacemaker	7.3	381.69	27.81	1.4	369.63	5.30	10.5	357.67	37.45
Injection procedures	0.9	116.44	1.04	0.06	106.58	.06	4.1	80.28	3.27
Heart catheterization	0.9	350.46	3.32	0.2	342.70	.59	1.9	337.96	6.30
Heart catheter and angiography	1.9	763.27	14.45	0.1	771.03	1.11	2.1	821.88	17.45
Other	2.1	1,461.09	30.18	0.1	718.82	1.03	6.3	920.94	58.38
Radiology									
Head or brain CAT scans	0.06	77.53	.04	0.0	0.00	0.00	5.7	106.08	6.03
Chest x-rays	0.9	28.94	.27	0.03	45.00	.01	69.7	24.95	17.40
Other	0.6	186.00	1.17	0.0	0.00	0.00	17.8	87.02	15.45
Laboratory									
Clinical pathology consultation	0.03	94.80	.03	0.0	0.00	0.00	4.4	45.19	1.98
Other	0.7	31.22	.21	0.06	31.24	.02	8.4	34.78	2.91
Other Tests									
Electrocardiogram	6.7	50.89	3.42	0.9	64.75	.59	65.6	36.81	24.16
Rythm EKG	0.8	27.74	.21	0.1	22.95	.03	5.6	17.62	.99
Electrocardiographic monitoring	1.6	158.15	2.54	0.3	129.80	.45	11.4	105.63	12.03
Echocardiography	3.0	157.09	4.73	0.5	145.91	.71	13.7	109.63	15.03
Non-invasive studies of cerbral and carotid arteries	0.1	124.50	.14	0.03	74.90	.02	3.2	103.00	3.34
EEG	0.03	55.86	.02	0.0	0.00	0.00	2.9	41.09	1.18
Other	2.0	306.80	5.98	0.2	264.19	.53	7.7	193.91	15.02
All Other Charges	0.9	304.81	2.71	.09	152.00	.13	10.2	304.67	30.94
TOTAL CHARGES			149.94			19.44			499.13
ONE DAY PREOPERATIVE									
Office visits	0.7	45.64	.33	0.09	21.37	.02	3.0	27.07	.82
ER visits	0.06	30.95	.02	0.0	0.00	0.00	4.0	50.28	2.03
Hospital visits	7.7	68.80	5.33	1.2	72.14	.89	26.2	91.06	23.82
Critical care visits	2.0	82.68	1.66	0.4	94.31	.35	8.7	123.17	10.67
Consultations	12.2	86.32	10.57	1.1	92.57	1.01	9.7	96.88	9.42
TOTAL MEDICAL CARE			17.91			2.27			46.76

Source: BMAD linked beneficiary file, 1987.

TABLE 3-26

PERMANENT PACEMAKER INSERTION BILLINGS FOR SAME DAY AS SURGERY

	PRIMARY SURGEON			SECOND SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary surgeon	100.0%	$1,170.96	$1,170.96						
Second surgeon				7.9%	$474.92	$37.74			
Anesthesia							35.4%	$250.53	$88.76
Medical Care									
Office visits	0.09%	$42.07	$.04	0.06%	$28.10	$.02	0.9%	$30.81	$.29
Hospital visits	5.9	66.84	3.93	1.1	64.86	.71	24.3	83.73	20.37
Critical care visits	2.0	79.39	1.59	0.4	109.91	.47	9.3	106.34	9.85
Other	0.8	82.77	.64	0.1	104.92	.15	2.9	72.39	2.12
Consultations	10.8	84.74	9.16	0.6	89.52	.51	6.5	90.87	5.89
Surgery									
Insertion of temporary pacemaker	1.0	294.54	2.96	0.06	336.55	.19	1.1	331.67	3.81
Other	4.0	1,098.42	43.80	2.9	582.63	17.05	2.8	447.21	12.44
Radiology									
Chest x-ray	0.5	14.80	.08	0.0	0.00	0.00	52.2	15.68	8.19
Insertion of pacemaker, flouroscopy and radiography	0.7	64.33	.44	0.0	0.00	0.00	5.4	30.09	1.62
Other	0.2	128.46	.29	0.0	0.00	0.00	6.8	47.63	3.24
Laboratory	0.03	12.80	.004	0.0	0.00	0.00	3.1	27.48	.85
Other Tests									
Electrocardiograms	2.8	23.07	.66	0.5	17.42	.08	29.8	16.91	5.04
Other	2.6	119.60	3.05	0.3	91.19	.24	6.1	80.91	4.97
All Other Charges	0.5	456.24	2.36	0.1	422.94	.49	14.9	325.29	48.62
TOTAL CHARGES			1239.96			57.65			216.06

Source: BMAD linked beneficiary file, 1987.

TABLE 3-27

PERMANENT PACEMAKER INSERTION BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			SECOND SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			Average Allowed Charge			Average Allowed Charge	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care									
Office visits	15.7%	$ 39.98	$ 6.21	2.8%	$48.91	$1.35	60.2%	$64.99	$39.13
ER visits	2.6	124.68	3.22	0.6	81.67	.47	11.6	201.06	23.24
Hospital visits	12.3	101.86	12.54	2.9	102.48	2.97	57.9	167.15	96.71
Critical care visits	2.0	96.23	1.96	0.4	99.63	.40	17.3	121.23	20.94
Other	1.7	78.91	1.31	0.2	40.46	.09	15.7	65.91	10.34
Consultations	0.3	27.65	1.09	0.06	18.95	.01	13.2	45.76	6.04
Surgery									
Repair or replacement of pacemaker	1.1	594.05	6.65	0.03	75.00	.02	0.4	407.08	1.52
Injection procedures	0.5	152.22	.70	0.03	3.00	.001	3.5	87.15	3.03
Other	4.0	607.84	24.24	.04	367.73	1.37	15.4	587.66	90.53
Radiology									
Head or brain CAT scans	0.1	201.60	.12	0.0	0.00	0.00	4.2	111.02	4.68
Chest x-ray	2.8	38.05	1.05	0.2	32.56	.07	56.8	33.24	18.87
Other	0.3	269.71	.85	.03	80.00	.02	23.2	107.98	25.03
Laboratory									
Clinical pathology consultation	0.0	0.00	0.00	0.0	0.00	0.00	1.8	37.39	.67
Surgical pathology	.03	35.00	.01	0.0	0.00	0.00	5.2	55.18	2.88
Other	1.8	29.38	.54	0.3	17.86	.05	19.7	32.04	6.32
Other Tests									
Electrocardiograms	10.4	45.30	4.70	2.0	42.77	.86	52.6	40.03	21.06
Rhythm EKG	4.6	21.96	1.02	0.5	19.18	.09	7.0	22.21	1.55
Electrocardiographic monitoring	2.4	154.92	3.69	0.2	122.56	.25	9.5	120.83	11.44
Echocardiography	1.0	196.54	1.97	0.3	182.29	.47	5.7	123.14	7.06
Electronic analysis of pacemaker system	13.8	55.45	7.65	1.9	46.08	.86	18.9	52.67	9.94
EEGs	0.1	59.45	.03	0.00	.00	.00	1.8	47.98	.87
Other	2.4	95.89	2.26	0.3	115.26	.30	12.9	140.34	18.16
All Other Charges	0.9	41.08	.35	0.3	58.19	.15	25.2	145.00	36.48
TOTAL CHARGES			82.16			9.80			456.49

Source: BMAD linked beneficiary file, 1987.

preoperative days 2-7. In general the visit and consult billing activity follows a similar pattern to that found for CABG surgery.

Seven percent of pacemaker patients have a temporary pacemaker inserted by their primary surgeon during the preoperative period. Electrocardiograms are also performed about 7 percent of the time by primary surgeon. This test is performed more often by a different surgeon (66 percent of pacemaker patients), for a fee that is about 15 percent less, $37 versus $51 from the primary surgeon. (The difference may be due to location, as physicians may bill for interpretation only in the inpatient setting).

Table 3-26 presents same day billings for permanent pacemaker insertion. The average allowed charge is $1,170 for the primary surgeon. A second surgeon is employed 8 percent of the time, for a fee of $475, over one-third the national average global fee for the surgery.

There are more hospital visits and consultations (5.9 and 10.8 percent, respectively) provided by the primary surgeon for pacemaker surgery than was observed for the CABG index surgery, but little other billing activity.

Postoperative visits are provided frequently by both the primary surgeon and other physicians (Table 3-27). For example, 16 percent of patients receive office visit bills from their primary surgeon, 3 percent from the second surgeon and 60 percent from some other physician during the postoperative period. Consultations are mostly provided by a different physician from the primary or second surgeon.

The majority of tests are provided by a physician other than the primary surgeon. However, the primary surgeon does sometimes provide electrocardiograms and electronic analysis of the pacemaker system during the postoperative period.

3.5 Urological Surgery: Transurethral Resection of the Prostate (TURP) Surgery

Tables 3-28, 3-29 and 3-30 summarize the billings for patients receiving Transurethral Resection of the Prostate (TURP) surgery. Looking first at the

TABLE 3-28

PREOPERATIVE BILLINGS FOR TRANSURETHRAL RESECTION OF THE PROSTATE (TURP) SURGERY (n=12,261)

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			Average Allowed Charge	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
UP TO SEVEN DAYS PREOPERATIVE						
Medical Care						
Office visits	20.3%	$28.80	$5.84	22.0%	$35.07	$7.72
ER visits	0.06	27.91	.02	0.8	36.35	.28
Hospital visits	18.1	68.15	12.35	23.3	188.13	43.88
Critical care visits	0.05	72.58	.04	1.1	149.80	1.59
Other	1.0	24.90	.25	2.3	75.64	1.76
Consultations	12.5	73.73	9.24	18.8	99.11	18.65
Surgery						
Cystourethroscopy	12.0	115.62	13.87	2.3	117.56	2.74
Cystometrogram	1.9	63.85	1.20	0.1	53.55	.07
Urethral catheterization	2.3	20.84	.47	1.1	21.03	.22
Prostate biopsy	1.6	103.27	1.67	0.5	134.74	.66
Other	5.4	219.66	11.90	5.9	485.39	28.42
Radiology	4.2	93.29	3.89	65.3	50.77	33.16
Laboratory	14.8	12.94	1.91	14.1	47.64	6.73
Other Tests	0.1	38.06	.04	4.2	76.42	3.24
All Other Charges	3.4	26.57	.92	7.6	160.64	12.21
TOTAL CHARGES			**63.61**			**161.33**
ONE DAY PREOPERATIVE						
Office visits	1.9	27.33	.53	1.8	32.97	.59
ER visits	0.06	27.91	.02	0.8	36.35	.28
Hospital visits	11.7	50.88	5.96	11.1	86.94	9.66
Critical care visits	0.008	40.80	.003	0.2	93.86	.18
Consultations	3.3	70.29	2.30	10.4	86.06	8.96
TOTAL MEDICAL CARE			**8.81**			**19.67**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-29

TRANSURETHRAL RESECTION OF THE PROSTATE (TURP) SURGERY BILLINGS FOR THE SAME DAY AS THE INDEX SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Primary surgeon	100.0%	$1,138.81	$1,138.81			
Co-surgeon or assistant surgeon				0.3%	$601.15	$1.81
Anesthesia				73.1	208.38	152.26
Medical Care						
Office visits	0.4%	$25.69	$.09	0.3%	$32.62	$.11
ER visits	0.008	51.84	.004	0.3	35.25	.10
Hospital visits	6.6	57.40	3.77	16.3	91.16	14.89
Critical care visits	0.03	79.43	.03	0.8	110.56	.91
Other	0.04	18.62	.01	0.01	85.87	.59
Consultations	2.1	67.99	1.45	8.9	84.25	7.48
Surgery						
Cystourethroscopy	7.2	212.74	15.23	2.1	180.29	3.71
Prostate biopsy	2.1	82.04	1.74	0.1	139.22	.19
Prostatectomy (TUR-2 stage)	0.02	419.20	.07	0.008	256.00	4.79
Removal of epididymis or testes	2.0	275.22	5.63	0.02	311.78	.23
Inguinal hernia repair	0.1	373.26	.72	1.0	585.14	6.37
Other	7.2	203.82	14.65	2.4	312.25	7.44
Radiology	0.6	40.76	.25	14.6	31.73	4.64
Laboratory	0.8	38.73	.32	57.0	75.26	42.93
Other Tests	0.3	23.97	.06	13.5	16.81	2.27
All Other Charges	0.8	106.30	.81	12.1	155.57	18.82
TOTAL CHARGES			**1,183.64**			**269.54**

Source: BMAD linked beneficiary file, 1987.

TABLE 3-30

TRANSURETHRAL RESECTION OF THE PROSTATE (TURP) SURGERY BILLINGS FOR UP TO 90 DAYS AFTER SURGERY

	PRIMARY SURGEON			DIFFERENT PHYSICIAN		
		Average Allowed Charge			*Average Allowed Charge*	
	Percent of Patients	Per User	Per Patient	Percent of Patients	Per User	Per Patient
Medical Care						
Office visits	17.8%	$38.41	$6.84	47.4%	$53.37	$25.28
ER visits	0.6	26.31	.16	8.9	42.26	3.75
Hospital visits	3.8	63.68	2.45	33.8	142.04	47.95
Other	1.7	37.46	.65	14.0	94.47	13.19
Consultations	1.0	73.12	.73	16.5	110.75	18.27
Surgery	12.0	264.04	31.72	15.0	344.75	59.24
Radiology	1.2	119.44	1.39	36.9	248.22	91.56
Laboratory	31.5	19.72	6.22	36.9	61.24	22.61
Other Tests	0.5	86.01	.41	25.6	72.93	18.69
All Other Charges	2.2	23.38	.52	18.7	179.66	33.55
TOTAL CHARGES			51.09			334.09

Source: BMAD linked beneficiary file, 1987.

top rows of Table 3-28, office and hospital visits and consultations are billed relatively frequently by both the primary surgeon and other physicians up to seven days prior to surgery. A large share of the hospital visits, occur just one day prior to TURP surgery, 60 percent of primary surgeon visits and one half of the other physicians' visits.

Twelve percent of TURP patients receive a cystourethroscopy from their primary surgeon during the preoperative period. Primary surgeons are also submitting bills for laboratory work.

The average allowed charge for the TURP surgery is $1,139 (Table 3-29). The only visits billed for on the day of surgery with any frequency are hospital visits. Seven percent of TURP patients had cystourethroscopies performed by their primary surgeon on the day of surgery. There was little other billing by the primary surgeon.

Table 3-30 summarizes the postoperative billings for TURP surgery. Eighteen percent of patients were billed for office visits by their primary surgeon during this postoperative period. Twelve percent of TURP patients received a surgical procedure from their primary surgeon. This twelve percent represents a wide range of services, with no one service occurring more than one percent of the time. There were frequent billings by physicians apart from the primary surgeon during this 90 day period.

3.6 Readmissions During the 90-Day Postoperative Period

Table 3-31 summarizes information on readmissions for patients receiving the index procedures. Lens procedures and laser eye surgery are not included in this table because these procedures are performed predominately in an outpatient setting and any hospital admissions following surgery would most likely be for unrelated conditions.

The percentage of patients readmitted to a hospital within 90 days of the admission for the index procedure is presented in the first column. Columns 2 and 3 provide the percentage of patients readmitted into the same major diagnostic category (MDC) as the index procedure, broken down by

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TABLE 3-31

READMISSION RATES FOR INPATIENT STUDY PROCEDURES[a]

		READMISSIONS IN THE SAME MDC AS THE INDEX SURGERY		
Index Surgeries	**PERCENTAGE READMITTED**	Percent Surgical	Percent Medical	**PERCENTAGE WITH CHARGES FROM PRIMARY SURGEON DURING READMISSION**
Cholecystectomy	13.2%	0.7%	1.6%	3.9%
Partial Colectomy	18.3	4.1	3.5	7.9
Carotid Thromboendarterectomy	23.7	5.7	2.5	10.0
Total Knee Replacement	12.9	2.3	1.0	8.4
Total Hip Replacement	14.5	2.0	2.1	7.3
Coronary Artery Bypass Graft (CABG) Surgery	22.5	3.4	7.5	2.6
Permanent Pacemaker Insertion	22.2	3.3	7.9	7.3
Transurethral Resection of the Prostate (TURP)	14.5	0.7	1.7	3.9

[a] All percentages are based on the total sample, not the subsample of readmitted cases.

Source: BMAD linked beneficiary file, 1987.

surgical or medical diagnosis related group (DRG). All percentages are based on the total sample, not the subsample of readmitted cases.

The fourth column gives the percentage of patients receiving services from their primary surgeon during a readmission. In a surprisingly high proportion of cases, patients were readmitted before the 90-day follow-up period expired: between 13 and 24 percent depending on the procedure. The majority of these readmissions appear to be unrelated to the surgery, however, at least to the extent that they fall into a different MDC category. Thus, only 3.3 percent of knee replacement patients were readmitted with musculoskeletal problems, representing roughly one-quarter (3.3/12.9) of all knee replacement readmissions. When the readmission is within the same MDC, it is as likely to be for medical management as it is for repeat surgery.

The primary surgeons were involved in one-half or fewer of these readmissions, at least as indicated by their billings. In some cases, they were re-performing the study procedure; about one-quarter of the thromboendarterectomy readmissions involved a second thromboendarterectomy by the same surgeon. In other cases, the surgeon was providing diagnostic services that may or may not have been related to the original surgery, e.g. cystourethroscopy on former TURP patients. Not surprisingly, hospital visits and consultations constituted a relatively large proportion of the services provided by surgeons during readmission. It is possible that some of these visits or consultations could be related to complications of the original surgical procedure, or they could involve a new medical problem. In either case, it is important to keep in mind that a number of these readmissions may have occurred after the carrier's global fee period had elapsed.

4.0 VARIATION IN PRE AND POSTOPERATIVE BILLINGS BY CARRIER

4.1 Carrier Differences in Global Fee Definition

Most, if not all, Part B carriers use the global fee concept in reimbursing surgical procedures. The carriers differ, however, in how they define the contents of the global fee, both in terms of what services are included and the length of the period covered. In order to determine the actual global fee definitions used by various carriers, HCFA's Bureau of Program Operations (BPO) surveyed 15 carriers in early 1990. (The remaining carriers will be surveyed in the summer of 1990.) These 15 carriers cover the eight largest states (in terms of Medicare enrollment), as well as six smaller states.*

Detailed data were collected from each carrier on such areas as:

(1) the type of visits included in the pre and postoperative periods, respectively;

(2) the length of the global fee period, both pre and postoperatively;

(3) whether other services (besides visits) were included in the global fee; and

(4) how incidental, bilateral, multiple, and team surgeries were handled.

Because the duration of the postoperative global fee period varies by procedure for most carriers, BPO requested this information for 20 families of surgical procedures.

In this chapter, we compare the frequency of billed visits during the pre and postoperative periods for the surveyed carriers. Sufficient detail was not available to conduct similar comparisons for other (non-visit) services or for incidental surgeries. Three carriers reported, for example, that preoperative treatment for the condition requiring surgery was included in the global fee, but no information was available on how that determination was made. Presumably, these carriers maintain procedure-specific lists of related treatment services.

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*California is served by two carriers, both of whom were surveyed.

Table 4-1 summarizes global fee definitions for the preoperative period. Only 14 of the 15 surveyed carriers are shown; we have not included Equicor-North Carolina, as they were not serving as the carrier during the year represented by our BMAD data (1987). The four columns on the table refer to four categories of visits, as defined by CPT-4 codes: (1) consultations; (2) outpatient visits (office plus emergency department); (3) critical care (ICU); and (4) hospital visits. A zero indicates that the carrier does not include any visits of this type in the global fee. The positive numbers refer to the number of days before surgery that are included in the global fee. Thus, California Blue Shield includes consultations performed during the entire week before surgery, but only includes other types of visits if they are provided in the two days immediately before the operation.

Seven of the fourteen carriers shown do not include any kind of preoperative visit or consultation in their global fee. The remaining carriers include some (or in two cases, all) kinds of visits, although the episodes are generally quite short. Most typically, these carriers limit the preoperative global fee period to three days.

Table 4-2 displays the duration of the postoperative global fee periods for each carrier. The numbers indicate the number of days following the surgery during which routine follow-up visits are considered part of the global fee. The procedures shown in the columns of the table represent the same groups of procedures analyzed in Chapter 3. In most cases, the families included in the BPO survey correspond exactly with the procedure codes included in this report. There are two areas of difference, however. The global fee data collected by BPO for prostatectomy, refer to open prostatectomies only, not TURPs. Similarly, their cataract surgery codes include only extractions and not any of the two-stage lens procedures (extraction plus IOL insertion).

All of the carriers shown include postoperative follow-up care in their global fees for most surgical procedures. (A few make an exception for pacemaker insertion and laser eye surgery.) Some carriers (not shown) report

TABLE 4-1

CARRIER DIFFERENCES IN GLOBAL FEE DEFINITION: PREOPERATIVE PERIOD

	CONSULTATIONS	OUTPATIENT VISITS	CRITICAL CARE VISITS	HOSPITAL VISITS
California Blue Shield	7 days	2 days	2 days	2 days
Florida Blue Shield	0	5 days	5 days	5 days
HCSC (Illinois)	0	0	0	0
Massachusetts Blue Shield	0	0	0	0
Michigan Blue Shield	3 days	3 days	3 days	3 days
Empire (New York)	0	3 days	3 days	3 days
North Dakota Blue Shield	0	0	0	0
Pennsylvania Blue Shield	30 days	0	3 days	3 days
Texas Blue Shield	0	0	0	3 days
Aetna - Arizona	0	0	0	0
Occidental - California	0	3 days	3 days	3 days
Equicor - Wyoming	0	0	0	0
Travelers - Virginia	0	0	0	0
Nationwide - Ohio	0	0	0	0

Source: BPO survey, 1990.

TABLE 4-2

CARRIER DIFFERENCES IN GLOBAL FEE DEFINITION: NUMBER OF DAYS IN POSTOPERATIVE PERIOD[a]

	CABG	PROSTATECTOMY	HIP REPLACEMENT	KNEE REPLACEMENT	PACEMAKER INSERTION	CARTOID THROMBOENDARTERECTOMY	CHOLECYSTECTOMY	PARTIAL COLECTOMY	CATARACT PROCEDURES	LASER EYE SURGERY
California Blue Shield	90	90	180	120	30	90	45	90	90	45
Florida Blue Shield	90	90	180	120	0	90	45	90	90	45
HCSC (Illinois)	20	11	26	25	5	20	7	15	8	5
Massachusetts Blue Shield[b]	14	14	14	14	14	14	14	14	14	14
Michigan Blue Shield	90	90	180	180	30	90	45	90	90	45
Empire (New York)	30	21	42	180	21	28	28	28	42	14
North Dakota Blue Shield	14	14	14	14	14	14	14	14	14	14
Pennsylvania Blue Shield	90	90	270	180	90	90	45	90	90	45
Texas Blue Shield[b,c]	28	28	28	28	0	28	28	28	28	28
Aetna - Arizona	90	90	180	120	90	90	45	90	90	0
Occidental - California	90	90	180	120	90	90	45	90	90	45
Equicor - Wyoming	90	90	180	180	90	90	45	90	90	45
Travelers - Virginia	90	45	270	180	90	90	45	90	90	30
Nationwide - Ohio[c]	90	90	180	150	30	90	45	90	90	90

[a] In some cases the follow-up period varies based on the individual procedure code within a family. Shown here are the follow-up days for the most frequently performed procedure.

[b] These carriers include only inpatient care in the global fee.

[c] These carriers exclude critical care.

Source: BPO survey, 1990.

that they do not include visits for complications; unfortunately, the claims data do not allow us to make this distinction.

Of particular interest is the fact that two carriers (Massachusetts Blue Shield and Texas Blue Shield) limit their global fee periods to include inpatient care only. The same two carriers also include an exceedingly short follow-up time in their global fee: 14 and 28 days, respectively. Given that most hospital stays are considerably shorter than these times, this means that Massachusetts and Texas surgeons are free to bill fee-for-service for much of the care that would be packaged in the global fee in other states. Texas Blue Shield further circumscribes the definition of a global fee, by excluding critical care visits (as does Nationwide of Ohio, as well).

4.2 Comparison of Global Fee Policies with Actual Billings

Tables 4-3 through 4-22 compare the global fee policies reported by the surveyed carriers with the pre and postoperative visits actually billed. Actual billings for ten families of procedures are based on the BMAD beneficiary file claims analyzed in Chapter 3. Two tables are presented for each procedure group: one for preoperative, and one for postoperative, visits. Because the means are very sensitive to outliers, only carriers with at least 100 cases are shown. (This criterion excluded Equicor of Wyoming from all tables.)

In all cases, we display the average number of a given type of visit per patient, i.e. across all patients, not just those receiving any visits. Outpatient visits and consultations provided on the day of surgery were assumed to be preoperative in nature; hospital visits on the same day were assumed to be postoperative. All numbers displayed in bold-face type indicate that the associated visits were provided during the global fee period.

4.2.1 General Surgical Procedures

Cholecystectomy: Table 4-3 presents the number of preoperative visits and consultations for cholecystectomy. As seen in the first column of Table

TABLE 4-3

MEAN PREOPERATIVE VISITS FOR CHOLECYSTECTOMY BY CARRIER

		OUTPATIENT VISITS		HOSPITAL VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.052**	**.145**[b]	**.082**	**.373**[b]	**.071**
Florida Blue Shield	.385	**.042**[c]	**.004**	**.020**[c]	**.004**
HCSC (Illinois)	.303	.159	.009	.382	.083
Massachusetts Blue Shield	.282	.158	.017	.203	.062
Michigan Blue Shield	**.086**[a]	**.110**[a]	**.008**	**.208**[a]	**.008**
Empire (New York)	.319	**.051**[a]	**.005**	**.181**[a]	**.005**
Pennsylvania Blue Shield	**.051**	.088	.006	**.071**[a]	**.013**
Texas Blue Shield	.279	.133	.027	**.065**[a]	**.009**
Occidental - California	.443	**.154**[a]	**.028**	**.195**[a]	**.024**
Travelers - Virginia	.257	.071	.000	.336	.097
Nationwide - Ohio	.260	.096	.011	.220	.062

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

4-3, carriers that exclude consultations from their global fees definitely "pay the price" in terms of higher consultation bills. The number of patients with a preoperative consultation bill from their surgeon ranges from 26 percent in Virginia and Ohio to 44 percent in southern California (Occidental). By contrast, only 5 percent of patients have comparable bills in northern California (Blue Shield) and Pennsylvania, where preoperative consultations are packaged for at least 7 days. (Because the typical patient only receives a single preoperative consultation, these means can be approximately interpreted as percentages.)

Carriers that also include preoperative outpatient and hospital visits in their global fee experience fewer bills as well. Because the global fee period for these carriers never exceeds five days, and more typically spans only 2-3 days, the visit billings are a little more difficult to interpret.* By concentrating on the day before surgery, we probably obtain a better picture of how much care is really being bundled. Michigan Blue Shield data, for example, show an average 0.11 outpatient visits per patient in the 7 days prior to surgery. Almost no visits are provided in the day immediately before the operation, however, suggesting that the billed visits were probably provided between 4 and 7 days preoperatively*. (Michigan's global fee period does not begin until three days before the surgery.) Similar patterns are observed for most of the carriers who include at least some preoperative visits in their global fee. California Blue Shield is a notable exception, with as many outpatient and hospital visits in the day prior to surgery as carriers that do not bundle any preoperative visits.

Table 4-4 presents similar data on postoperative billings for cholecystectomy. While every carrier surveyed bundles hospital visits in the global fee, most of them nevertheless exhibit some billings. It is possible that some of these visits may have been for complications and were considered outside the global fee; Travelers of Virginia, Occidental, and Empire

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*The BPO survey was made available only after the data files had been constructed with a 7-day preoperative window. If we had known ahead of time that most carriers define much shorter preoperative windows, we could have specified our files accordingly.

TABLE 4-4

MEAN POSTOPERATIVE VISITS FOR CHOLECYSTECTOMY BY CARRIER[a]

CARRIER	HOSPITAL VISITS	CRITICAL CARE VISITS	OUTPATIENT VISITS	CONSULTATIONS
California Blue Shield	**.287**	**.007**	**.123**	.004
Florida Blue Shield	**.007**	.018	**.024**	.000
HCSC (Illinois)[b]	**.354**	**.006**	**.356**	.035
Massachusetts Blue Shield[c]	**.328**	**.000**	.774	.017
Michigan Blue Shield	**.249**	**.016**	**.229**	.008
Empire (New York)[d]	**.139**	**.032**	**.176**	.005
Pennsylvania Blue Shield	**.198**	**.000**	**.168**	.035
Texas Blue Shield[d]	**.067**	.106	.175	.013
Occidental - California	**.158**	**.004**	**.118**	.028
Travelers - Virginia	**.628**	**.053**	**.195**	.000
Nationwide - Ohio	**.170**	.034	**.099**	.011

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[a] All means are based on a 90-day post-operative follow-up period. However, the longest global fee period for the carriers shown is only 45 days (used by 7 carriers).

[b] The postoperative global fee period is limited to 7 days.

[c] The postoperative global fee period is limited to 14 days.

[d] The postoperative global fee period is limited to 28 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

explicitly exclude such visits. This would not explain why carriers like HCSC of Illinois and Massachusetts of Blue Shield average 0.3 or more hospital visits per patient. Given the relatively short lengths of stay for cholecystectomy, the short postoperative global fee periods used by these two carriers should not be a factor.

All carriers exhibit some amount of outpatient billing following cholecystectomy. Unfortunately, we do not know whether these bills were provided before or after the 45-day postoperative period expired. (Seven of the nine carriers shown use a 45-day follow-up period, but the visit means are calculated based on a 90-day postoperative period.) However, as will be seen in subsequent tables, a number of carriers pay postoperative outpatient bills even for procedures with the full 90-day follow-up period.

Partial Colectomy: Tables 4-5 and 4-6 display similar findings for partial colectomy. Again, we observe relatively high preoperative consultation rates for those carriers who do not bundle them (Table 4-5). Unlike cholecystectomy, carriers are more likely to employ the longer 90-day followup period in their colectomy global fee (6 of the 10 shown in Table 4-6). Even still, we observe substantial billing for hospital visits--4 bills for every 10 patients in the case of Nationwide of Ohio, for example.

Carotid Thromboendarterectomy: Table 4-7 is similar to that shown for the other two general surgical procedures. There appears to be less postoperative billing, however, as seen in Table 4-8. (All but one of the carriers shown employ a 90-day followup in their global fee.)

4.2.2 Orthopedic Procedures

Total Knee Replacement: There are relatively few preoperative consultation bills, even among those carriers that do not bundle this service (Table 4-9). In large part, this may reflect the discretionary nature of this procedure. Joint replacement surgery is scheduled well in advance, and it is likely that the orthopedic consultation was performed some weeks before the operation itself. HCSC of Illinois does not package any preoperative visits,

TABLE 4-5

MEAN PREOPERATIVE VISITS FOR PARTIAL COLECTOMY BY CARRIER

		OUTPATIENT VISITS		HOSPITAL VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.069**	**.143**[b]	**.015**	**.222**[b]	**.054**
Florida Blue Shield	.335	**.043**[c]	**.000**	**.011**[c]	**.003**
HCSC (Illinois)	.215	.105	.013	.447	.110
Massachusetts Blue Shield	.274	.101	.006	.417	.113
Michigan Blue Shield	**.069**[a]	**.119**[a]	**.010**	**.074**[a]	**.015**
Empire (New York)	.253	**.049**[a]	**.000**	**.171**[a]	**.012**
Pennsylvania Blue Shield	**.066**	.078	.000	**.132**[a]	**.003**
Texas Blue Shield	.303	.104	.008	**.011**[a]	**.000**
Occidental - California	.452	**.162**[a]	**.000**	**.210**[a]	**.024**
Nationwide - Ohio	.208	.070	.004	.459	.108

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-6

MEAN POSTOPERATIVE VISITS FOR PARTIAL COLECTOMY BY CARRIER[a]

CARRIER	HOSPITAL VISITS	CRITICAL CARE VISITS	OUTPATIENT VISITS	CONSULTATIONS
California Blue Shield	**.064**	**.000**	**.025**	.049
Florida Blue Shield	**.008**	.005	.000	.000
HCSC (Illinois)[b]	**.421**	**.039**	**.316**	.044
Massachusetts Blue Shield[c]	**.130**	**.000**	.607	.012
Michigan Blue Shield	**.259**	**.000**	**.158**	.005
Empire (New York)[d]	**.069**	**.004**	**.102**	.012
Pennsylvania Blue Shield	**.099**	**.000**	**.189**	.078
Texas Blue Shield[d]	**.119**	.272	.168	.011
Occidental - California	**.214**	**.029**	**.067**	.062
Nationwide - Ohio	**.413**	.201	**.077**	.004

[a] All means are based on a 90-day postoperative follow-up period.

[b] The postoperative global fee period is limited to 15 days.

[c] The postoperative global fee period is limited to 14 days.

[d] The postoperative global fee period is limited to 28 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-7

MEAN PREOPERATIVE VISITS FOR CAROTID THROMBOENDARTERECTOMY BY CARRIER

		OUTPATIENT VISITS		HOSPITAL VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.046**	**.152**[b]	**.013**	**.238**[b]	**.079**
Florida Blue Shield	.293	**.076**[c]	**.000**	**.000**[c]	**.000**
Michigan Blue Shield	**.114**[a]	**.065**[a]	**.016**	**.138**[a]	**.008**
Pennsylvania Blue Shield	**.116**	.063	.009	**.089**[a]	**.027**
Texas Blue Shield	.350	.094	.000	**.039**[a]	**.010**
Occidental - California	.433	**.067**[a]	**.000**	**.225**[a]	**.033**
Nationwide - Ohio	.244	.098	.005	.285	.073

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-8

MEAN POSTOPERATIVE VISITS FOR CAROTID THROMBOENDARTERECTOMY BY CARRIER[a]

CARRIER	**HOSPITAL VISITS**	**CRITICAL CARE VISITS**	**OUTPATIENT VISITS**	**CONSULTATIONS**
California Blue Shield	**.007**	**.007**	**.007**	.000
Florida Blue Shield	**.000**	.005	**.016**	.000
Michigan Blue Shield	**.049**	**.024**	**.114**	.000
Pennsylvania Blue Shield	**.000**	**.000**	**.258**	.027
Texas Blue Shield[b]	**.103**	.128	.118	.005
Occidental - California	**.058**	**.016**	**.025**	.075
Nationwide - Ohio	**.166**	.062	**.052**	.004

[a] All means are based on a 90-day postoperative follow-up period.

[b] The postoperative global fee period is limited to 28 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-9

MEAN PREOPERATIVE VISITS FOR KNEE REPLACEMENT BY CARRIER

		OUTPATIENT VISITS		HOSPITAL VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.000**	**.202**[b]	**.042**	**.008**[b]	**.000**
Florida Blue Shield	.014	**.112**[c]	**.019**	**.014**[c]	**.005**
HCSC (Illinois)	.059	.109	.025	.328	.244
Michigan Blue Shield	**.020**[a]	**.060**[a]	**.000**	**.000**[a]	**.000**
Pennsylvania Blue Shield	**.016**	.059	.011	**.011**[a]	**.011**
Texas Blue Shield	.043	.135	.016	**.022**[a]	**.000**
Occidental - California	.016	**.164**[a]	**.049**	**.049**[a]	**.016**
Nationwide - Ohio	.006	.031	.000	.113	.113

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

and orthopedic surgeons there appear to bill fairly often for hospital visits.

The majority of carriers surveyed use especially long followup periods for orthopedic surgery. Seven of the nine carriers shown in Table 4-10 include at least four postoperative months in the global fee. Nevertheless, three of those carriers exhibit at least 0.3 hospital visits per patient. The two carriers with very limited followups (Illinois and Texas) "pay the price" in outpatient billings: approximately one office visit bill for every two patients.

Total Hip Replacment: There is considerably more billing for preoperative consultations for hip replacement than observed previously for knee replacements. Of the seven carriers who do not package this service, three exhibit relatively few bills, while the remaining four receive consultation claims in 16-19 percent of cases. Massachusetts Blue Shield was one of the three carriers that excluded consultations from its global fee definition, but yet received relatively few bills. One explanation may be the propensity of orthopedic surgeons in that state to bill for preoperative hospital visits instead. One-third of all hip replacment patients received a visit bill the day before surgery.

Massachusett orthopedic surgeons also bill relatively frequently for postoperative outpatient visits, which are not included in their global fee: almost one bill for every patient (0.844, see Table 4-12). Carriers with relatively short follow-up periods, like Illinois and Texas, are also more likely to receive postoperative bills. Carriers like Pennsylvania Blue Shield are an anomaly; their global fee period extends for 270 days, yet four postoperative hospital visit bills were paid for every 10 patients.

4.2.3 Ophthalmologic Procedures

The four tables included here for eye surgery (Tables 4-13 through 4-16) include an additional visit category: eye exams, corresponding to CPT codes 92002-92014. We have assumed that carriers consider these codes the same way that they do the office visit codes. It is possible, however, that,

TABLE 4-10

MEAN POSTOPERATIVE VISITS FOR KNEE REPLACEMENT BY CARRIER[a]

	HOSPITAL VISITS	CRITICAL CARE VISITS	OUTPATIENT VISITS	CONSULTATIONS
California Blue Shield	**.033**	**.000**	**.008**	.000
Florida Blue Shield	**.000**	.000	**.005**	.000
HCSC (Illinois)[b]	**.395**	**.000**	**.453**	.008
Michigan Blue Shield	**.320**	**.000**	**.160**	.020
Pennsylvania Blue Shield	**.308**	**.005**	**.195**	.000
Texas Blue Shield[c]	**.033**	.016	.495	.011
Occidental - California	**.090**	**.016**	**.057**	.000
Nationwide - Ohio	**.187**	.000	**.056**	.000

[a] All means are based on a 90-day post-operative follow-up period. However, seven of the nine carriers shown have considerably longer periods (120-180 days).

[b] The postoperative global fee period is limited to 25 days.

[c] The postoperative global fee period is limited to 28 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-11

MEAN PREOPERATIVE VISITS FOR TOTAL HIP REPLACEMENT BY CARRIER

	CONSULTATIONS	OUTPATIENT VISITS Seven Days Before	OUTPATIENT VISITS One Day Before	HOSPITAL VISITS Seven Days Before	HOSPITAL VISITS One Day Before
California Blue Shield	**.016**	**.136**[b]	**.049**	**.043**[b]	**.033**
Florida Blue Shield	.164	**.054**[c]	**.004**	**.028**[c]	**.018**
HCSC (Illinois)	.173	.117	.024	.278	.049
Massachusetts Blue Shield	.068	.146	.039	.447	.301
Michigan Blue Shield	**.020**[a]	**.020**[a]	**.000**	**.047**[a]	**.000**
Empire (New York)	.171	**.034**[a]	**.000**	**.060**[a]	**.000**
Pennsylvania Blue Shield	**.031**	.047	.016	**.021**[a]	**.000**
Texas Blue Shield	.045	.097	.029	**.040**[a]	**.017**
Occidental - California	.190	**.126**[a]	**.036**	**.126**[a]	**.090**
Nationwide - Ohio	.007	.064	.007	.179	.050

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[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-12

MEAN POSTOPERATIVE VISITS FOR TOTAL HIP REPLACEMENT BY CARRIER[a]

	HOSPITAL VISITS	CRITICAL CARE VISITS	OUTPATIENT VISITS	CONSULTATIONS
California Blue Shield	**.021**	**.000**	**.011**	.000
Florida Blue Shield	**.004**	.000	**.007**	.000
HCSC (Illinois)[b]	**.185**	**.000**	**.327**	.025
Massachusetts Blue Shield[c]	**.922**	**.000**	.844	.039
Michigan Blue Shield	**.027**	**.000**	**.128**	.007
Empire (New York)[d]	**.085**	**.000**	**.120**	.000
Pennsylvania Blue Shield	**.389**	**.000**	**.042**	.021
Texas Blue Shield[e]	**.034**	.000	.318	.006
Occidental - California	**.018**	**.000**	**.012**	.018
Nationwide - Ohio	**.010**	.000	**.007**	.000

[a] All means are based on a 90-day post-operative follow-up period. However, six of the ten carriers shown had considerably longer follow-up periods.

[b] The postoperative global fee period is limited to 26 days.

[c] The postoperative global fee period is limited to 14 days.

[d] The postoperative global fee period is limited to 42 days.

[e] The postoperative global fee period is limited to 28 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

unbeknownst to us, some carriers exclude these codes from their global fee definitions. Since both lens procedures and laser eye surgery are primarily performed on an outpatient basis, we do not show hospital visits on these tables.

Lens Procedures: Table 4-13 provides some support for our assumption that the same packaging rules apply to the eye exam codes as apply to outpatient visits, at least for lens procedures. There is little difference in the relative frequency of the two sets of codes. Those carriers who do include preoperative visits in their global fees receive fairly few bills for either set of codes on the day before surgery. Many more are paid earlier in the week, but again this is probably due to the fact that we have used a seven-day window, rather than the shorter time periods used by most carriers.

Table 4-14 shows dramatically what may happen when a carrier excludes postoperative outpatient care from the global fee of a procedure performed almost exclusively outside the hospital. The Massachusetts carrier pays for almost two eye exams and almost one office visit on top of every single lens procedure charge. By contrast, Texas (which also excludes postoperative care), and North Dakota and Illinois (which have fairly short follow-up periods) receive considerably fewer bills. Clearly, more than carriers' stated policies must affect whether or not surgeons submit bills.

Laser Eye Surgery: Unlike lens procedures, carriers appear to be paying eye exam bills, even when preoperative care is included in the global fee (see Table 4-15). Eyes exams are performed (and reimbursed) on the day before surgery in one-quarter of cases in Florida and New York, for example.

Most carriers have global fee periods considerably shorter than the 90-days used in our study. Despite this, we observe very little postoperative billing either for eye exams or outpatient visits (Table 4-16).

4.2.4 Cardiovascular Procedures

CABG Surgery: Carriers that do not package preoperative consultations are far more likely to receive bills (Table 4-17). Occidental, the southern California carrier, pays for preoperative consultations in almost one-half of

TABLE 4-13

MEAN PREOPERATIVE VISITS FOR LENS PROCEDURES BY CARRIER

		EYE EXAMS		OFFICE VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.007**	**.060**[b]	**.007**	**.174**[b]	**.046**
Florida Blue Shield	.010	**.150**[c]	**.048**	**.029**[c]	**.001**
HCSC (Illinois)	.028	.109	.036	.084	.066
Massachusetts Blue Shield	.012	.125	.046	.163	.078
Michigan Blue Shield	**.008**[a]	**.064**[a]	**.003**	**.021**[a]	**.004**
Empire (New York)	.006	**.120**[a]	**.016**	**.009**[a]	**.001**
North Dakota Blue Shield	.009	.115	.068	.071	.021
Pennsylvania Blue Shield	**.007**	.037	.013	.057	.011
Texas Blue Shield	.001	.037	.010	.023	.009
Aetna - Arizona	.041	.133	.039	.129	.034
Occidental - California	.036	**.124**[a]	**.041**	**.090**[a]	**.028**
Travelers - Virginia	.002	.058	.015	.132	.074
Nationwide - Ohio	.012	.065	.010	.042	.011

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-14

MEAN POSTOPERATIVE VISITS FOR LENS PROCEDURES BY CARRIER[a]

	EYE EXAMS	**OFFICE VISITS**	**CONSULTATIONS**
California Blue Shield	**.014**	**.057**	.001
Florida Blue Shield	**.071**	**.002**	.000
HCSC (Illinois)[b]	**.322**	**.209**	.010
Massachusetts Blue Shield[c]	1.966	.963	.014
Michigan Blue Shield	**.215**	**.048**	.001
Empire (New York)[d]	**.738**	**.017**	.005
North Dakota Blue Shield[c]	**.142**	**.094**	.003
Pennsylvania Blue Shield	**.133**	**.354**	.007
Texas Blue Shield[e]	.346	.104	.001
Aetna - Arizona	**.050**	**.068**	.009
Occidental - California	**.084**	**.029**	.004
Travelers - Virginia	**.119**	**.012**	.003
Nationwide - Ohio	**.069**	**.026**	.001

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[a] All means are based on a 90-day postoperative follow-up period.

[b] The postoperative global fee period is limited to 8 days.

[c] The postoperative global fee period is limited to 14 days.

[d] The postoperative global fee period is limited to 42 days.

[e] The postoperative global fee period is limited to 28 days.

Note: Numbers in bold-face type indicate that these visits wer eprovided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-15

MEAN PREOPERATIVE VISITS FOR LASER EYE SURGERY BY CARRIER

		EYE EXAMS		OFFICE VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.000**	**.108**[b]	**.044**	**.248**[b]	**.140**
Florida Blue Shield	.005	**.304**[c]	**.280**	**.024**[c]	**.009**
HCSC (Illinois)	.006	.272	.263	.020	.006
Michigan Blue Shield	**.000**	**.152**[a]	**.147**	**.042**[a]	**.014**
Empire (New York)	.003	**.289**[a]	**.267**	**.003**[a]	**.003**
Pennsylvania Blue Shield	**.003**	.046	.044	.120	.059
Texas Blue Shield	.002	.411	.384	.090	.059
Aetna - Arizona[d]	.003	.187	.159	.123	.048
Occidental - California	.006	**.162**[a]	**.148**	**.081**[a]	**.031**
Travelers - Virginia	.000	.139	.130	.098	.073
Nationwide - Ohio	.007	.218	.210	.073	.034

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

[d] Aetna does not reimburse laser eye surgery on a global fee basis.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-16

MEAN POSTOPERATIVE VISITS FOR LASER EYE SURGERY BY CARRIER[a]

	EYE EXAMS	OFFICE VISITS	CONSULTATIONS
California Blue Shield[b]	**.006**	**.032**	.000
Florida Blue Shield[b]	**.030**	**.017**	.002
HCSC (Illinois)[c]	**.078**	**.016**	.006
Michigan Blue Shield[b]	**.046**	**.023**	.000
Empire (New York)[d]	**.153**	**.003**	.000
Pennsylvania Blue Shield[d]	**.029**	**.059**	.002
Texas Blue Shield[e]	.116	.043	.000
Aetna - Arizona[g]	.011	.039	.000
Occidental - California[b]	**.044**	**.024**	.008
Travelers - Virginia[f]	**.016**	**.065**	.000
Nationwide - Ohio	**.023**	**.032**	.000

[a] All means are based on a 90-day postoperative follow-up period. However, only one of the eleven carriers shown has a period this long.

[b] The postoperative global fee period is limited to 45 days.

[c] The postoperative global fee period is limited to 5 days.

[d] The postoperative global fee period is limited to 14 days.

[e] The postoperative global fee period is limited to 28 days.

[f] The postoperative global fee period is limited to 30 days.

[g] Aetna does not reimburse laser eye surgery on a global fee basis.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-17

MEAN PREOPERATIVE VISITS FOR CABG SURGERY BY CARRIER

		OUTPATIENT VISITS		HOSPITAL VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.048**	**.088**[b]	**.000**	**.036**[b]	**.008**
Florida Blue Shield	.281	**.000**[c]	**.000**	**.005**[c]	**.000**
HCSC (Illinois)	.183	.010	.000	.269	.154
Michigan Blue Shield	**.134**[a]	**.015**[a]	**.000**	**.186**[a]	**.093**
Empire (New York)	.247	**.000**[a]	**.000**	**.006**[a]	**.006**
Pennsylvania Blue Shield	**.130**	.009	.003	**.071**[a]	**.009**
Texas Blue Shield	.284	.010	.000	**.010**[a]	**.003**
Occidental - California	.452	**.008**[a]	**.000**	**.032**[a]	**.012**
Nationwide - Ohio	.287	.000	.000	.070	.057

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

all CABG operations. By contrast, there is virtually no billing for preoperative office visits, whether the carrier includes them in the global fee or not. Two of the carriers shown do not include preoperative hospital visits, yet there is a three-fold difference in the number of claims. HCSC of Illinois pays for a hospital visit the day before surgery in 15 percent of all operations, while Nationwide of Ohio does so only 5 percent of the time.

Despite the fact that all carriers include at least 20 days of postoperative care in the global fee, there is a surprising amount of billing by surgeons during the hospital stay (Table 4-18). The Illinois, Michigan, and Pennsylvania carriers are reimbursing between three and four hospital visit claims for every 10 CABG patients. Once CABG patients are discharged, however, few bills are submitted to any of the carriers shown.

Pacemaker Insertion: Two of the carriers shown do not reimburse pacemaker insertion on a global fee basis: Florida and Texas. Consultation rates are high for these carriers, as well as the three others shown who do not include preoperative consults in their global fee (Table 4-19). The absence of a global fee policy does not always mean large preoperative bills, however; Florida receives virtually no preoperative visit bills.

Similarly, there are relatively few postoperative bills submitted in Florida (Table 4-20). By constrast, Texas (which also does not pay on a global fee basis) averages over one hospital visit and one-half of an office visit for every pacemaker patient. Except for Pennsylvania, all of the carriers have short followup periods, and as a result, pay for considerably more outpatient visits than has been observed for other surgical procedures.

4.2.5 Urologic Procedures

TURP: Again, we see that carriers, who do not package preoperative services, end up paying more bills (Table 4-21). Nevertheless, there is considerable variation across these carriers in the number of bills they do pay for.

While not all of the carriers shown on Table 4-22 employ the standard 90-day follow-up period, this can not explain the substantial postoperative

TABLE 4-18

MEAN POSTOPERATIVE VISITS FOR CABG SURGERY BY CARRIER[a]

	HOSPITAL VISITS	CRITICAL CARE VISITS	OUTPATIENT VISITS	CONSULTATIONS
California Blue Shield	**.001**	**.000**	**.000**	.000
Florida Blue Shield	**.003**	.000	**.003**	.000
HCSC (Illinois)[b]	**.447**	**.125**	**.043**	.034
Michigan Blue Shield	**.371**	**.000**	**.015**	.026
Empire (New York)[c]	**.000**	**.056**	**.031**	.000
Pennsylvania Blue Shield	**.389**	**.000**	**.093**	.015
Texas Blue Shield[d]	**.134**	.068	.051	.007
Occidental - California	**.089**	**.068**	**.040**	.012
Nationwide - Ohio	**.030**	.000	**.000**	.000

[a] All means are based on a 90-day post-operative follow-up period.

[b] The postoperative global fee period is limited to 20 days.

[c] The postoperative global fee period is limited to 30 days.

[d] The postoperative global fee period is limited to 28 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-19

MEAN PREOPERATIVE VISITS FOR PACEMAKER INSERTION BY CARRIER

		OUTPATIENT VISITS		HOSPITAL VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.079**	**.084**[b]	**.021**	**.921**[b]	**.174**
Florida Blue Shield[c]	.291	.012	.006	.006	.006
HCSC (Illinois)	.417	.014	.000	.324	.094
Michigan Blue Shield	**.180**	**.068**[a]	**.000**	**.451**[a]	**.045**
Pennsylvania Blue Shield	**.063**	.020	.000	**.147**[a]	**.016**
Texas Blue Shield[c]	.330	.045	.010	.590	.120
Occidental - California	.474	**.000**[a]	**.000**	**.110**[a]	**.064**
Nationwide - Ohio	.271	.030	.000	.452	.163

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] These carriers do not have a global fee for pacemaker insertion.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-20

MEAN POSTOPERATIVE VISITS FOR PACEMAKER INSERTION BY CARRIER[a]

	HOSPITAL VISITS	**CRITICAL CARE VISITS**	**OUTPATIENT VISITS**	**CONSULTATIONS**
California Blue Shield[b]	**.711**	**.058**	**.431**	.005
Florida Blue Shield[c]	.027	.006	.111	.003
HCSC (Illinois)[d]	**.323**	**.079**	**.317**	.006
Michigan Blue Shield[b]	**.316**	**.008**	**.309**	.000
Pennsylvania Blue Shield	**.127**	**.016**	**.107**	.020
Texas Blue Shield[c]	1.145	.090	.520	.000
Occidental - California	**.341**	**.353**	**.318**	.000
Nationwide - Ohio[b]	**.506**	.096	**.349**	.000

[a] All means are based on a 90-day post-operative follow-up period.

[b] The postoperative global fee period is limited to 30 days.

[c] These carriers do not have a global fee for pacemaker insertion.

[d] The postoperative global fee period is limited to 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

TABLE 4-21

MEAN PREOPERATIVE VISITS FOR TURP BY CARRIER

		OUTPATIENT VISITS		HOSPITAL VISITS	
	CONSULTATIONS	Seven Days Before	One Day Before	Seven Days Before	One Day Before
California Blue Shield	**.015**	**.320**[b]	**.042**	**.183**[b]	**.031**
Florida Blue Shield	.199	**.150**[c]	**.005**	**.024**[c]	**.000**
HCSC (Illinois)	.340	.213	.021	.397	.000
Massachusetts Blue Shield	.158	.144	.017	.281	.123
Michigan Blue Shield	**.079**[a]	**.106**[a]	**.005**	**.074**[a]	**.005**
Empire (New York)	.160	**.122**[a]	**.002**	**.217**[a]	**.012**
North Dakota Blue Shield	.241	.548	.154	.500	.269
Pennsylvania Blue Shield	**.058**	.204	.007	**.138**[a]	**.010**
Texas Blue Shield	.197	.280	.048	**.062**[a]	**.008**
Aetna - Arizona	.149	.138	.006	.349	.222
Occidental - California	.221	**.284**[a]	**.027**	**.197**[a]	**.024**
Travelers - Virginia	.148	.262	.005	.467	.243
Nationwide - Ohio	.161	.185	.010	.229	.080

[a] Global fee period includes only 3 days.

[b] Global fee period includes only 2 days.

[c] Global fee period includes only 5 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

billings observed for many of them. Postoperative hospital visit bills average 0.25 or greater for six of the carriers shown. The short follow-up may explain the high rates of postoperative outpatient visits for Illinois, New York, and North Dakota, but Pennsylvania, which does use the full 90 days, averages just as many visits per TURP patient (0.497).

TABLE 4-22

MEAN POSTOPERATIVE VISITS FOR TURP BY CARRIER[a]

	HOSPITAL VISITS	CRITICAL CARE VISITS	OUTPATIENT VISITS	CONSULTATIONS
California Blue Shield	**.055**	**.000**	**.013**	.000
Florida Blue Shield	**.016**	**.000**	**.015**	.000
HCSC (Illinois)[b]	**.265**	**.000**	**.450**	.031
Massachusetts Blue Shield[c]	**.257**	**.000**	.880	.031
Michigan Blue Shield	**.048**	**.000**	**.246**	.005
Empire (New York)[d]	**.038**	**.000**	**.579**	.003
North Dakota Blue Shield[c]	**.375**	**.000**	**.529**	.038
Pennsylvania Blue Shield	**.038**	**.000**	**.497**	.032
Texas Blue Shield[e]	**.021**	.000	.470	.005
Aetna - Arizona	**.365**	**.000**	**.063**	.006
Occidental - California	**.094**	**.003**	**.085**	.022
Travelers - Virginia[f]	**.262**	**.000**	**.347**	.010
Nationwide - Ohio	**.290**	**.000**	**.270**	.012

[a] All means are based on a 90-day post-operative follow-up period.

[b] The postoperative global fee period is limited to 11 days.

[c] The postoperative global fee period is limited to 14 days.

[d] The postoperative global fee period is limited to 21 days.

[e] The postoperative global fee period is limited to 28 days.

[f] The postoperative global fee period is limited to 45 days.

Note: Numbers in bold-face type indicate that these visits were provided during the global fee period.

Source: BMAD beneficiary file, 1987.

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